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Letter dated 23 July 2018 from the Secretary-General addressed to the President of the Security Council

I have the honour to transmit herewith (see annex) a communication dated 9 July 2018 from the Director General of the Organisation for the Prohibition of Chemical Weapons (OPCW). It transmits the report of the OPCW fact-finding mission in the Syrian Arab Republic regarding incidents in Hamdaniyah on 30 October 2016 and in Karm al-Tarrab on 13 November 2016, as well as the interim report of the mission regarding the alleged use of toxic chemicals as a weapon in Duma on 7 April 2018.

I should be grateful if you would bring the present letter and its annex to the attention of the members of the Security Council.

(*Signed*) António **Guterres**

18-12289 (E) 260718

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Annex

[Original: Arabic, Chinese, English, French, Russian and Spanish]

I have the honour to transmit to you two notes by the Technical Secretariat entitled "Report of the OPCW fact-finding mission in Syria regarding the incidents in Al-Hamadaniyah on 30 October 2016 and in Karm Al-Tarrab on 13 November 2016" (see enclosure I) and "Interim report of the OPCW fact-finding mission in Syria regarding the incident of alleged use of toxic chemicals as a weapon in Douma, Syrian Arab Republic, on 7 April 2018" (see enclosure II).

(*Signed*) Ahmet Üzümcü

Enclosure I

[Original: Arabic, Chinese, English, French, Russian and Spanish]

NOTE BY THE TECHNICAL SECRETARIAT

REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA REGARDING THE INCIDENTS IN AL-HAMADANIYAH ON 30 OCTOBER 2016 AND IN KARM AL-TARRAB ON 13 NOVEMBER 2016

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1. EXECUTIVE SUMMARY

1.1 At its Forty-Eighth Meeting, the OPCW Executive Council (hereinafter "the Council") adopted a decision entitled "Reports of the OPCW Fact-Finding Mission in Syria" (EC-M-48/DEC.1, dated 4 February 2015) in which, inter alia, it requested the Director-General to provide to the Council at its next regular session information on the progress of the OPCW Fact-Finding Mission in Syria (FFM) and on specific plans, schedules, and their implementation. In response to that request, the OPCW Technical Secretariat (hereinafter "the Secretariat") submitted a Note to address the future activities of the FFM (S/1255/2015*, dated 10 March 2015 and Add.1, dated 13 March 2015).

1.2 The Secretariat received from the Syrian Arab Republic note verbale No. 109 (dated 17 November 2016) containing correspondence No. 259 (dated 16 November 2016) providing information regarding several incidents reported to have occurred in the Aleppo residential neighbourhoods of "Al-Hamadaniyah" and "Dahiyat al-Assad" on 31 October 2016; in "Manian located to the west of the city of Aleppo" on 3 November 2016; and in Karm al-Tarrab, also referred to as "Al-Nayrab located to the west of the city of Aleppo" on 13 November 2016. Note verbale No. 109 requested that the FFM take action.

1.3 The Secretariat also received note verbale No. 113 (dated 29 November 2016) containing correspondence No. 9551 (dated 29 November 2016) referring to incidents in the "1070 Apartments Project in the Al-Hamadaniyah area in the south-west of Aleppo City" on 31 October 2016; and in "Maarata near the village of Um-Housh in the suburb of Aleppo" on 16 September 2016.

1.4 These notes verbales form the basis of the deployments of the FFM between December 2016 and April 2018 in regard to a number of incidents.

1.5 The Director-General subsequently dispatched the FFM to collect facts pertinent to the reported incidents. The FFM team deployed on five occasions to gather facts and retrieve samples in connection with the incidents. The team was composed of OPCW inspectors and qualified interpreters. During these deployments, the FFM conducted interviews, collected testimonies, and reviewed documents and other information provided by the authorities of the Syrian Arab Republic. Furthermore, the FFM visited the Scientific Studies and Research Centre (SSRC) in Barzi to conduct a technical exploitation of one item and to secure and recover samples for analysis at the OPCW Laboratory.

1.6 This report details only the incidents in the neighbourhood of Al-Hamadaniyah on 30 October 2016, which was reported to have occurred on 31 October 2016, and in the area of Karm al-Tarrab, also referred to as Al-Nayrab, on 13 November 2016.

1.7 On the basis of the information received and analysed, the prevailing narrative of the interviews, and the results of the laboratory analyses, the FFM cannot confidently determine whether or not a specific chemical was used as a weapon in the incidents that took place in the neighbourhood of Al-Hamadaniyah on 30 October 2016 and in

the area of Karm al-Tarrab on 13 November 2016. The FFM is of the view that the persons affected in the reported incidents may, in some instances, have been exposed to some type of non-persistent, irritating substance.

2. FACT-FINDING MISSION BACKGROUND INFORMATION

2.1 The Secretariat received from the Syrian Arab Republic note verbale No. 109 (dated 17 November 2016) containing correspondence No. 259 (dated 16 November 2016) providing information regarding "three toxic gas attacks" which took place in the Aleppo residential neighbourhoods of "Al-Hamadaniyah" and "Dahiyat al-Assad" on 31 October 2016; in "Manian located to the west of the city of Aleppo" on 3 November 2016; and in "Al-Nayrab located to the west of the city of Aleppo" on 13 November 2016. Note verbale No. 109 also requested that the FFM take action.

2.2 The Secretariat also received note verbale No. 113 (dated 29 November 2016) containing correspondence No. 9551 (dated 29 November 2016), which referred to an incident in the "1070 Apartments Project in the Al-Hamadaniyah area in the south-west of Aleppo City" on 31 October 2016. Note verbale No. 113 also referred to the incident in "Maarata near the village of Um-Housh in the suburb of Aleppo" on 16 September 2016.

2.3 Notes verbales 109 and 113 initiated the deployments carried out by the FFM between December 2016 and April 2018. During these deployments, and throughout the post-deployment activities, the team gathered, reviewed, and analysed all available information related to the incidents reported by the authorities of the Syrian Arab Republic.

2.4 After reviewing the information gathered and provided by the authorities of the Syrian Arab Republic following the first deployment, the FFM identified a number of issues that were further clarified, as described below:

(a) The reported incident in the neighbourhood of Al-Hamadaniyah in the city of Aleppo includes the two residential areas of Dahiyat al-Assad and the 3000 Apartments Project. The 1070 Apartments Project borders the 3000 Apartments Project from the south. Throughout meetings and correspondence with the authorities of the Syrian Arab Republic, it was decided that, for reporting purposes, the 1070 Apartments Project would be considered as part of the neighbourhood of Al-Hamadaniyah. Furthermore, although note verbale No. 109 refers to 31 October 2016 as the date of the reported incident, through a combination of interviews with individuals connected to the incident, the analysis of individual military police reports, as well as meetings with the authorities of the Syrian Arab Republic, it was later concluded that this incident took place on 30 October 2016.

(b) The location of the incident reported to have occurred on 13 November 2016 was later identified by the team as Karm al-Tarrab, which is an area close to the Al-Nayrab airport in the city of Aleppo.

2.5 Note verbale No. 109 (dated 17 November 2016) referred to an incident taking place on 3 November 2016 in "Manian located to the west of the city of Aleppo". During its first deployment, the FFM did not receive any pertinent information from the authorities of the Syrian Arab Republic. Therefore, the team requested information relevant to the incident, including documents, photos, videos, access to witnesses, and environmental and biomedical samples. In response, the authorities of the Syrian Arab Republic stated that they did not have any substantial information to support the activities of the FFM and acknowledged that, in the absence of such information, the team would be unable to report on this incident.

2.6 Note verbale No. 113 (dated 29 November 2016) referred to an incident taking place on 16 September 2016 in "Maarata near the village of Um-Housh". This report excludes that incident, which was detailed in a previous report issued by the FFM (S/1491/2017, dated 1 May 2017).

2.7 Accordingly, the present report covers the work of the FFM in relation to the incidents reported in notes verbales No. 109 (dated 17 November 2016) and No. 113 (dated 29 November 2016) in the neighbourhood of Al-Hamadaniyah on 30 October 2016 and in the area of Karm al-Tarrab on 13 November 2016.

3. FIRST DEPLOYMENT

3.1 The first deployment was comprised of the Mission Team Leader, seven inspectors, and two qualified interpreters, who conducted activities from 11 to 19 December 2016. The team composition is described in the table below.

FFM team composition
11 to 19 December 2016

No.	Function	Speciality
1.	Mission Team Leader	Inspection Team Leader
2.	Deputy Team Leader	Chemical Weapons Munitions Specialist
3.	Confidentiality Officer	Analytical Chemist Inspector
4.	Evidence Officer	Analytical Chemist Inspector
5.	Logistics Officer	Chemical Weapons Munitions Specialist
6.	Health & Safety Officer	Health & Safety Specialist Inspector
7.	Non-Destructive Evaluation (NDE) Specialist	Chemical Weapons Munitions Specialist
8.	NDE Specialist	Chemical Weapons Munitions Specialist
9.	Interpreter	N/A
10.	Interpreter	N/A

3.2 The team met with the authorities of the Syrian Arab Republic to discuss the details of the deployment, and to gather information associated with the incidents reported in notes verbales No. 109 (dated 17 November 2016) and No. 113 (dated 29 November 2016). During its deployment, the FFM collected incident reports, medical records of casualties, and names of individuals affected and treating hospital staff.

3.3 Additionally, the team was provided access to the SSRC in Barzi to inspect an unexploded munition and seven environmental samples collected by the authorities of the Syrian Arab Republic.

3.4 Furthermore, the FFM was able to conduct a technical exploitation of the unexploded munition and to take and secure splits of environmental samples for further analysis by the OPCW Laboratory. Given that the samples were collected by the authorities of the Syrian Arab Republic, the team documented the handover process and ensured that the samples were treated in line with the relevant standard operating procedures (SOPs), including the provisions on chain of custody.

3.5 Over the course of the deployment, the team was able to conduct 13 interviews with casualties and medical personnel connected to the reported incidents.

3.6 A list of documents, evidence, and samples collected, as well as the reports of the technical exploitation in connection with the reported incidents, can be found in Annexes 3, 5, 9 and 12.

4. SECOND DEPLOYMENT

4.1 The FFM further deployed from 7 to 12 January 2017 to recover previously secured samples. The team composition is described in the table below.

FFM team composition
7 to 12 January 2017

No.	Function	Speciality
1.	Mission Team Leader	Inspection Team Leader
2.	Deputy Team Leader	Analytical Chemist Inspector
3.	Interpreter	N/A

4.2 Upon arrival, the team met with the authorities of the Syrian Arab Republic to discuss the plan for movements to the SSRC in Barzi.

4.3 The FFM subsequently repacked and transported the previously secured samples to the OPCW Laboratory.

4.4 A list of samples collected during the second deployment can be found in Annex 5.

4.5 Samples recovered during the second deployment were analysed by the OPCW Laboratory. The report of the laboratory analysis can be found in Annex 7.

5. THIRD DEPLOYMENT

5.1 The Secretariat exchanged correspondence with the authorities of the Syrian Arab Republic to gather any additional information regarding note verbale No. 109 (dated 17 November 2016). This correspondence formed the basis of the FFM's third deployment from 6 to 17 December 2017. The team composition is described in the table below.

FFM team composition
6 to 17 December 2017

No.	Function	Speciality
1.	Mission Team Leader	Inspection Team Leader
2.	Deputy Team Leader	Analytical Chemist Inspector
3.	Confidentiality Officer	Chemical Weapons Munitions Specialist
4.	Evidence Officer	Health & Safety Specialist Inspector
5.	Logistics Officer	Chemical Weapons Munitions Specialist
6.	Interpreter	N/A
7.	Interpreter	N/A

5.2 Upon arrival, the team met with the authorities of the Syrian Arab Republic, who informed the FFM of the presence of 46 biomedical samples in connection with the reported incidents. The team was provided access to these samples at the SSRC in Barzi. The FFM also collected technical reports and medical information during its deployment.

5.3 While the FFM team was conducting its activities at the SSRC in Barzi, it was provided with information about the presence of eight environmental samples in relation to the reported incident in the neighbourhood of Al-Hamadaniyah. The authorities of the Syrian Arab Republic confirmed that its Technical Committee collected both environmental and biomedical samples. The team was provided with access to environmental samples.

5.4 The FFM was able to secure all the environmental and biomedical samples under OPCW custody for further analysis by the OPCW Laboratory. Given that the samples were collected by the authorities of the Syrian Arab Republic, the team documented the handover process and ensured that the samples were treated in line with the relevant SOPs, including the provisions on chain of custody.

5.5 A list of documents and samples collected in connection with the reported incidents can be found in Annexes 3 and 5.

6. FOURTH DEPLOYMENT

6.1 The FFM further deployed from 7 to 11 January 2018, to recover samples previously secured during its third deployment. The team composition is described in the table below.

FFM team composition
7 to 11 January 2018

No.	Function	Speciality
1.	Mission Team Leader	Inspection Team Leader
2.	Deputy Team Leader	Analytical Chemist Inspector
4.	Health & Safety Officer	Health & Safety Specialist Inspector
10.	Interpreter	N/A

6.2 Upon arrival, the team met with the authorities of the Syrian Arab Republic to discuss the plan for movements to the SSRC in Barzi.

6.3 The FFM subsequently repacked and transported the previously secured samples to the OPCW Laboratory.

6.4 A list of samples collected during the third deployment can be found in Annex 5.

6.5 Environmental samples recovered during the fourth deployment were analysed by the OPCW Laboratory. The report of the laboratory analysis can be found in Annex 8.

7. FIFTH DEPLOYMENT

7.1 The Secretariat exchanged correspondence with the authorities of the Syrian Arab Republic, including NV/ODG/213949/18, to gather additional information regarding note verbale No. 109 (dated 17 November 2016). This correspondence and note verbale No. 21 (dated 7 March 2018) from the Syrian Arab Republic formed the basis of the FFM's fifth deployment from 29 March to 7 April 2018. The team composition is described in the table below.

FFM team composition
29 March to 7 April 2018

No.	Function	Speciality
1.	Mission Team Leader	Inspection Team Leader
2.	Deputy Team Leader	Analytical Chemist Inspector
3.	Evidence Officer	Health & Safety Specialist
4.	Interpreter	N/A
5.	Interpreter	N/A

7.2 The team met with the authorities of the Syrian Arab Republic to discuss the details of the deployment, and to gather information associated with the reported incidents. The additional information gathered during the team's deployment included incident and technical reports.

7.3 Over the course of the deployment, the team was able to conduct 13 interviews with casualties and medical personnel connected to the reported incidents.

7.4 A list of documents and evidence gathered in connection with the reported incidents can be found in Annexes 3 and 5.

8. DATA ANALYSIS

Description of data

8.1 The data forming the basis for the present report of the FFM was collected during five deployments and the interim periods between these deployments. The data was provided by the authorities of the Syrian Arab Republic and the Russian Federation, and also includes data gathered or generated by the team. The types of data acquired include the following:

(a) Written documents

(i) Medical information was provided by the authorities of the Syrian Arab Republic regarding individuals connected with the incident, including casualties and treating physicians, as well as the facilities where the casualties were treated. It also includes medical records depicting the treatment of the casualties, X-rays, electrocardiograms (ECGs), blood test results, discharge sheets, and shift logs for the pertinent medical facilities and incident dates. When applicable, reports drafted by forensic doctors were provided.

(ii) Incident reports detailing the reported incidents were provided by the authorities of the Syrian Arab Republic. Some reports were generated by the Technical Committee of the authorities of the Syrian Arab Republic, while others were drafted by the Syrian Arab Armed Forces. They also include minutes and reports prepared by the police.

(iii) Technical reports include laboratory reports, consisting of the results of the laboratory analysis conducted by the authorities of the Syrian Arab Republic as well as the accompanying sample logbooks. When relevant, they may also include the description of the laboratory equipment, working instructions and standard operating procedures used during the aforementioned laboratory analyses. When applicable, laboratory quality assurance documents and calibration certificates are provided. The Russian Federation provided a report with the results of the laboratory analysis of samples reported to be connected with the incident in Al-Hamadaniyah.

(i) Inspector notes, meeting notes, and reports were generated by the team during the deployments.

(b) Electronic data

(ii) Pictures include photographs of locations, personnel, and objects reported to be in connection with the reported incidents, and screenshots of videos as well as computer software. This data was either provided by the authorities of the Syrian Arab Republic or collected by the FFM during interviews and the initial analyses process.

(iii) Videos include open source media and footage provided by the authorities of the Syrian Arab Republic.

(iv) Maps of the reported incidents with the coordinates or the description of the locations were either provided by the authorities of the Syrian Arab Republic or collected by the FFM during interviews and the initial analyses process.

(c) Interviews

(v) Testimonies gathered by the FFM team comprise audio and/or video recordings, or were collected in the form of written statements with individuals in relation to the reported incidents.

(vi) Documents generated during the interviews include drawings made by the interviewees and written notes of the FFM interview team.

(d) Samples

(vii) Environmental samples include those collected by the Technical Committee of the authorities of the Syrian Arab Republic and made available to the FFM.

(viii) Biomedical samples include those taken from individuals connected to the reported incidents by the medical staff of the relevant medical facilities. At a later stage, these samples were given to the Technical Committee of the authorities of the Syrian Arab Republic and made available to the FFM.

(e) Technical exploitation

(ix) A technical exploitation and assessment of an unexploded munition was conducted by the FFM. A written report was produced by the FFM team based on chemical detection, physical measurements, and non-destructive evaluation (NDE) techniques.

Data analysis methodology

8.2 The overarching purpose of the data analysis conducted by FFM inspectors was to collate facts in relation to the reported incidents, with a focus on identifying aspects related to the use of toxic chemicals as a weapon. Therefore, the FFM used, analysed, and reviewed all types of data mentioned in the section above.

8.3 The analysis of the medical information provided to the FFM and of the testimonies collected by the team was carried out by health and safety specialist inspectors within the FFM. They assessed how consistent the symptoms, treatment, and medical documentations were with potential exposure to a toxic chemical. Prior to being assessed, this information was translated into English by qualified interpreters assisting the FFM team.

8.4 The FFM analysed the incident and technical reports to establish a basic understanding of the event, and to identify potential interviewees, locations, and samples of interest. The information provided in these reports was translated and then compared to data gathered during the deployments and throughout post-deployment activities.

8.5 Inspector notes, meeting notes, and reports were used to compare the data gathered during the deployments and throughout post-deployment activities.

8.6 The FFM also analysed and used electronic data, including pictures, videos, and maps, as a reference to identify the location of the reported incidents as well as the whereabouts of the medical facilities that treated the casualties. This data was also used to corroborate the sequence of events that occurred on the dates of the reported incidents.

8.7 Testimonies, documents, and electronic data gathered by the FFM team during the interview process were also used to establish a link between the witnesses and the reported incidents.

8.8 The interview analysis methodology employed by the FFM allowed individual accounts to be collated into a prevailing narrative, where factual content could be extracted and reported according to the mandate.

8.9 First, the audio and video records of each interview conducted by the team were translated and transcribed into English by the interpreters of the FFM team in order to facilitate their thorough analysis. The interpreters were deployed with the team and were present during every interview.

8.10 Next, the verbal content of each interview (the video, audio, and transcripts thereof) was carefully and separately reviewed by at least two FFM inspectors. A timeline-based analysis table was produced in order to organise the individual responses. This allowed each respondent's description of locations, sights, sounds, smells, symptoms, and actions to be categorised according to relevant variables. During the interview review process, FFM inspectors matched the interviewees' responses with their respective variables in the analysis table. The result for each interview was a unique description of the evolving, sequential event, from the perspective of

interviewees. Once all the relevant narratives had been individually assembled, they were compared against one another. The final stage of interview analysis involved cross-checking all of the data to identify commonalities, gaps, and discrepancies.

8.11 Commonalities formed the basis for the prevailing narrative, and gaps were addressed and discrepancies were analysed to determine their significance. During the first three deployments and the subsequent initial analysis process, the FFM was able to identify a number of gaps and sought to address them. Furthermore, the FFM anticipated reasonable discrepancies in the events recalled from the interviewees, given that some of them were themselves casualties, that significant time had lapsed between the reported incidents, and that the interviews and combat operations in the areas of interest were ongoing. In cases where discrepancies were minor or of little consequence to establishing a prevailing narrative (i.e., the recollection of general timings and distances), they were disregarded. If reconciliation with the prevailing narrative was not possible, the discrepant narrative could be considered limited in value and therefore difficult to objectively address the FFM's mandated aims.

8.12 Environmental samples connected to the reported incidents were handed over to the Technical Committee of the authorities of the Syrian Arab Republic, which had been dispatched to Aleppo. The samples were further transported to the SSRC in Barzi, where the FFM team was allowed access to all of the samples over the course of several deployments.

8.13 During the first and third deployments, the FFM was able to take and secure original and splits from environmental samples provided by the Technical Committee of the authorities of the Syrian Arab Republic connected to the reported incidents, for further analysis by the OPCW. All samples were secured under OPCW seal, while waiting for arrangements for transportation.

8.14 During the second and fourth deployments, splits and original samples were transported back to the OPCW Laboratory. The process of segregating, packaging, transporting and handing over the samples was done according to OPCW SOPs. The procedure for the handover and takeover of samples between the FFM team and the OPCW Laboratory was witnessed by the representative of the authorities of the Syrian Arab Republic.

8.15 Environmental samples that were recovered during the second and fourth deployments were analysed by the OPCW Laboratory. The results of the laboratory analysis were used to confirm the absence or presence of scheduled chemicals in the samples. The team subsequently compared other available data to establish a link between the samples, the casualties, and the location of the reported incidents.

8.16 The remainder of the original environmental samples was left in the custody of the SSRC in Barzi. At the time this report was drafted, the FFM was not aware of how the military developments at the SSRC in Barzi on 14 April 2018 might have affected the aforementioned samples.

8.17 Biomedical samples were taken by the medical staff, given to the Technical Committee of the authorities of the Syrian Arab Republic, and made available to the FFM. The samples were further transported to the SSRC in Barzi where the FFM team was allowed access to them.

8.18 During the third deployment, the FFM was able to take and secure original biomedical samples provided by the Technical Committee of the authorities of the Syrian Arab Republic connected to the reported incidents, for further analysis by the OPCW. Owing to the limited quantity of the biomedical samples, it was agreed with the authorities of the Syrian Arab Republic that they would not be split and joint custody would not be applicable. The process of segregating, packaging, transporting, and handing over the samples was done according to OPCW SOPs. The samples were secured under OPCW seal, while waiting for arrangements for transportation.

8.19 During the fourth deployment, original samples were transported back to the OPCW Laboratory. The handover of the samples from the FFM team to the OPCW Laboratory was witnessed by the representative of the authorities of the Syrian Arab Republic.

8.20 On 22 February 2018, the FFM informed the authorities of the Syrian Arab Republic (note verbale No. ODG/213949/18) that the analyses of biomedical samples must be targeted towards the presence (or absence) of specific chemicals or their markers, owing to the low concentrations of such chemicals present in blood or plasma. Therefore, the biomedical samples could be analysed once such a targeting was possible, which would depend on the outcome of the analysis of the related environmental samples or evidence of such chemicals and their markers.

8.21 Based on the results of the laboratory analyses of the environmental samples, biomedical samples related to the reported incident in the neighbourhood of Al-Hamadaniyah were not analysed by the OPCW Laboratory. Biomedical samples connected to the reported incident in Karm al-Tarrab were also not analysed owing to the absence of environmental samples related to the same incident and sufficient information pointing towards specific chemicals and their markers.

8.22 The data gathered during the technical exploitation of an unexploded munition, reported to be linked to the incident in Karm al-Tarrab, was used to identify the type of the munition, with an emphasis on the calibre, size, model, external and internal structures, as well as the fill, to determine whether it was a chemical weapon. A written report was produced by the FFM team based on chemical detection, physical measurements and non-destructive evaluation (NDE) techniques.

8.23 The data analysis methodology employed by the FFM team was consistent with OPCW SOPs.

Analysis of the reported incident in the neighbourhood of Al-Hamadaniyah

Analysis of medical information and assessment of patient symptoms

8.24 During its deployments, the FFM received the following medical information from the authorities of the Syrian Arab Republic:

(a) Hospital reports from Aleppo Military Hospital (also known as Martyr Abdel Wahab Agha Hospital), Aleppo University Hospital, and Al-Razi Hospital. The reports taken from these hospitals confirmed that a large number of Syrian Arab Army (SAA) personnel were affected by "toxic chemical gases". The reported signs and symptoms from all three hospitals were similar and consistent, as follows: a burning sensation in the eyes, lacrimation, dyspnoea, tightness in the chest, fatigue, weakness and numbness in the limbs, abdominal pain and nausea, and vomiting or retching. The Aleppo Military Hospital also reported conjunctivitis, redness of skin, and red mucous membranes, while the Al-Razi Hospital also reported symptoms of headaches and dizziness. With regard to the treatment of the casualties, the reports mention that the patients were washed at Al-Razi Hospital, while they were given oxygen, bronchodilators, intravenous (IV) fluids, steroids and broad-spectrum antibiotics at the three hospitals. Patients were assessed, including with chest X-rays. All three hospitals confirmed that there were no fatalities associated with this incident. The information contained in all three hospital reports is consistent with the interview testimonies and the medical records in relation to the reported incident.

(b) During the second and fifth deployments, the FFM received several documents containing results of laboratory analyses of acetylcholinesterase (AChE) level in the blood samples of individuals connected to the reported incident. The results showed "normal AChE activity".

(c) A list containing the names of the patients treated in the emergency departments in multiple hospitals, and their signs and symptoms. The team identified and, during the first and the fifth deployments, conducted interviews with 11 casualties. Similarly, the team identified and interviewed five key medical personnel.

(d) Forty-eight medical records of individuals linked to the reported incident were provided to the FFM: 10 from Al-Razi Hospital, 19 from Aleppo University Hospital and 19 from Aleppo Military Hospital. Certain medical records belonged to civilians, while the majority belonged to SAA personnel. The team made their photocopies in electronic versions and returned the original medical records. Throughout the course of its deployment, the team was only able to interview SAA personnel and treating medical staff, thus making it impossible to verify the signs and symptoms exhibited by civilians. The administration of atropine in Al-Razi Hospital, as mentioned by one of the interviewees, was not observed in the medical records. It is worth noting that several entries in the medical records were illegible, making the team unable to undertake a comprehensive comparison. Clarification of these entries was sought from medical staff during interviews, without success.

Analysis and assessment of incident reports

8.25 During its deployments, the FFM received the following documents:

(a) An incident report from the authorities of the Syrian Arab Republic, including a description of the incident in the neighbourhood of Al-Hamadaniyah and Google Earth® screenshot images showing the location of the reported incident, as well as the coordinates of the impact locations (see Annex 10). The report describes that the incident occurred on 30 October 2016 where "armed groups attacked a number of southern areas in Aleppo City" (including the 1070 and 3000 Apartments Projects) "using several conventional weapons" as well as "some chemical weapons leading to the injury of more than 60 soldiers form the army" and a "few civilians". A Technical Committee of the authorities of the Syrian Arab Republic, consisting of three individuals, was able to visit the city of Aleppo on 31 October 2016. The Committee visited three hospitals to which casualties were taken, and interviewed doctors and patients connected to the reported incident. The committee also visited areas close to the locations of the incident (i.e. Dahiyat al-Assad and the 1070 and 3000 Apartments Projects). However, they were unable to visit the exact locations of the incident because of ongoing military activities at the time. The Committee performed a fast chemical screening on some clothing samples belonging to the casualties. The result of the screening was not described in the report. Furthermore, the report states that samples, whose nature and origin was not specified, were handed over to the SSRC in Barzi for laboratory analyses. The team assessed the incident report to get an overview of the sequence of events which formed the initial narrative of the reported incident. The team also identified a number of issues that needed to be clarified, such as the exact location of the incident, the ongoing activities on the date of the incident, the equipment used for the fast chemical screening, and the origin of the samples. The issues were discussed during the meetings held between the FFM and the authorities of the Syrian Arab Republic throughout the deployments, as well as through correspondence. The team was able to identify the location of the reported incident (i.e. Dahiyat al-Assad and the 1070 and 3000 Apartments Projects) through videos and Google Earth® screenshot images provided by the authorities of the Syrian Arab Republic. The ongoing activities on the date of the reported incident were clarified by cross-checking the information included in the incident report with the interviews conducted with individuals identified by the team as connected with the incident. Furthermore, the authorities of the Syrian Arab Republic provided the FFM with a data sheet on the equipment used for the fast chemical screening.

(b) Individual reports produced by the military police for 36 casualties linked to the reported incident, admitted to Al-Razi and University Hospitals in the city of Aleppo. The names of the casualties mentioned in the reports were cross-checked with the names of the patients on the aforementioned medical records to confirm their identities. The content of each was assessed by the

FFM and used to determine commonalities of the initial narrative. The reports were also used to verify the date of the reported incident in the neighbourhood of Al-Hamadaniyah.

(c) A list of names of "specialists and resident doctors involved in the treatment of patients admitted for poisoning" in the Aleppo University Hospital. This list was used to establish a link between the medical staff and the casualties. Given that the nature of the working hours of the medical staff is driven by operational needs, not all medical personnel involved in the treatment of the casualties in connection to the reported incident were mentioned on the list. The list includes only treating physicians.

(d) The FFM was provided with additional Google Earth® screenshot images, including a description of areas of the reported incident. The team used them to identify the geographical location of the reported incident, significant features, and objects in the area. These features and objects were used during the interview process to identify the positions of interviewees during the reported incident.

(e) During its third deployment, the team received a "comparative study" compiled by a group of experts from the Technical Committee of the authorities of the Syrian Arab Republic. The document compared the effects of riot control agents to the effects of "toxic gases used by terrorist groups" in several reported incidents, chief among which was Al-Hamadaniyah. It also contained references to the names and codes of chemicals mentioned by the authorities of the Syrian Arab Republic. The document states that soldiers who were affected during the reported incidents have displayed the same symptoms that occur after exposure to riot control agents. The FFM assessed the content of the document and concluded that it is largely based on open-source literature. In some cases the symptoms exhibited by the casualties, according to both their medical records and the interviews, correspond with the effects described in the document. However, these symptoms are not exclusive to the effects of riot control agents.

(f) The Russian Federation provided a report with the results of laboratory analysis of seven samples reported to be connected to the incident in Al-Hamadaniyah. No scheduled chemicals were found in the samples.

Analysis and assessment of electronic data

8.26 During its deployments, the FFM received the following electronic data:

(a) Note verbale No. 26 (dated 18 April 2017) containing two videos showing the same event in different length. The note verbale states that the videos contain footage of "the incident from the 1070 and 3000 Apartments Projects" showing the "use of chlorine gas". The videos show a release of greenish-yellowish smoke. The videos provided a 180-degree view of the recorded area including a military post and what appears to be an exploded

vehicle-borne improvised explosive device (VBIED). Through a geolocation process, the location of the building where the videos were filmed, the plume shown in the video and the approximate time of day have been established. The location and the time described in related documents and testimonies are consistent with the results of the geolocation process. The FFM cannot establish a link between the smoke shown in the video and the smoke described in testimonies.

(b) A video reported by the authorities of the Syrian Arab Republic to be connected to the incident from the 3000 Apartments Project. The video shows an impact and bursting of a projectile followed by a release of white smoke. The main visible effect after the explosion is a quickly developing vertical plume that reaches a height one and a half times higher than the electric pylons close to the impact point approximately four seconds later. Within half a minute, the plume reaches its maximum height before being moved sideways according to the local wind speed and direction. The lower half of the plume begins to thin out within one minute above the impact point. The camera then moves to the right and shows two other plumes that are further away than the first plume. The two plumes appear much darker with a greyish tone to them. The plumes disperse in a different direction than the first. After showing the two plumes for 15 seconds, the camera moves back to the first plume, showing that it has become depleted. Through a geolocation process, the location of the building where the video was filmed, the location of the plume shown in the video and the approximate time of day have been established. The locations and the time described in related documents and testimonies are not consistent with the results of the geolocation process. It was assessed that the video was made in the afternoon, while interviewees recalled that the incident happened in the morning hours. The interviewees said that they were facing the neighbourhood of Dahiyat al-Assad, while the location of the plume depicted in the video is behind their positions. Therefore, the FFM is unable to establish a link between the smoke shown in the video and the smoke described in testimonies.

(c) A video including an interview with three patients who are reported to have been affected as a result of the reported incident, lying on beds in Al-Razi Hospital, and two doctors involved in the treatment of these patients. The video shows patients receiving treatment, as well as the preparation of four individuals wearing full-face chemical protective masks with canisters and impermeable protective overalls in an outdoor location, which appears to be a makeshift decontamination station. One doctor described the decontamination and isolation phase. The symptoms of patients were listed as "shortness of breath, burning sensation in the chest, lacrimation and nausea". The second doctor mentioned that the patients "were likely exposed to chlorine". After analysing all available information, the team did not interview the two doctors identified in the video since they were not directly involved in the treatment of the casualties. However, the FFM interviewed another doctor who was involved in the treatment of the

casualties connected to the reported incident who described a similar decontamination station and procedures, and isolation in Al-Razi Hospital, as those that can be seen in the video. One casualty, who was treated in Al-Razi Hospital and interviewed by the team, recalled similar symptoms that were mentioned in the video.

Analysis and assessment of interviews

8.27 Over the course of five deployments, the FFM conducted 17 interviews with casualties and medical personnel linked to the incident.

8.28 The prevailing narrative established by interviews with casualties in relation to the aforementioned incident is as follows:

(a) Military activities between SSA personnel and armed opposition groups (AOGs) lasted for three days in the neighbourhood of Al-Hamadaniyah in the city of Aleppo before the date of the reported incident. During the military activities, different types of weapons were used, including small arms, artillery projectiles, mortars, rockets, and VBIEDs.

(b) Interviewees reported that on the morning of 30 October 2016, they were positioned in various locations in the residential neighbourhood of the Al-Assad Military Academy in Al-Hamadaniyah.

(c) A group of 25 SAA personnel gathered at roundabout 3000 in Al-Hamadaniyah. Around 7:00, the group was split into two subgroups of 12 and 13 soldiers. One subgroup was stationed at the entrance of the Al-Assad Military Academy and the other subgroup went inside the entrance of a structure opposite to Dahiyat Al-Assad, described by the interviewees as a "mall". The two locations were separated by a street. At approximately 8:30, the entire group of 25 SAA personnel engaged in an intense exchange of fire with AOGs. During this operation, artillery projectiles, mortars and rockets were used by the AOGs. One interviewee recalled that sometime between 8:30 and 8:45, a projectile landed on the street approximately 50 metres from their location. The device did not explode but made a "hissing sound" and released what was described as a white-to-yellow cloud and/or smoke. After the release of smoke, all SAA personnel began experiencing symptoms, while some collapsed. Some interviewees stated that, with the help of other soldiers, they began the evacuation operation of the SAA personnel who had collapsed. They transported these casualties to a pickup truck stationed nearby. The casualties were further evacuated to the 3000 roundabout, which is considered to be a secure location, mentioned during interviews as a "medical point".

(d) The rescue and evacuation operation lasted until approximately 10:00. Some casualties were administered first aid at the roundabout, while others were transported by ambulance to Aleppo University Hospital or straight to Aleppo Military Hospital. An interviewee mentioned that he was

provided with first aid right at the roundabout, after which he was taken to "the military camp" where he received further treatment and rested for a few days.

(e) With regard to the 3000 Apartments Project, approximately 40 SAA personnel, broken down into several groups, were positioned in the block of buildings and the surrounding open area closest to the confrontation line, next to the Al-Assad Military Academy. They were facing the neighbourhood of Dahiyat al-Assad which had been taken by AOGs. Those located in the buildings were spread among the ground, first, and second floors. Those who were stationed in an open area were either behind barricades or taking cover behind the buildings. Interviewees mentioned that there are several AOGs operating in the neighbourhood of Dahiyat al-Assad and that they were located inside intact buildings 30 to 60 metres away from SAA positions. An intense clash began at midnight on 30 October 2016. It was reported that some AOGs were wearing "full-face gas masks with filters". Some interviewees reported that, at approximately 8:30, more than one projectile was "launched and landed" close to their locations. One of the projectiles hit the wall of the building where the interviewees were stationed and fell to the ground "releasing white-to-yellow smoke", making a "hissing sound". Another projectile fell in the passageway between buildings releasing "gas or smoke". All the interviewees involved in this event described experiencing the same symptoms shortly after the gas or smoke had been released. Some of them recalled collapsing after inhaling the gas or smoke. Others, who rescued their colleagues who had collapsed, felt malaise afterwards. At around 10:00, another projectile described as a "chemical-filled device" was fired toward SAA positions. The projectile did not explode and made a "small sound". The sound emitted by the projectile was described as "different from regular explosions" similar to a "pressure release". Some interviewees said that it released a "thick yellow-to-green smoke", while others stated that the smoke had a "white-to-yellow colour". Interviewees stated that the smell, described as similar to household cleaning products, was stronger outside than inside the building. Casualties were evacuated straight to the Aleppo Military Hospital, while others were taken first to Al-Razi Hospital and Aleppo University Hospital for two or three days, before being transferred to the Aleppo Military Hospital.

(f) In relation to the 1070 Apartments Project, interviewees were positioned on the veranda of the first floor of a five-storey building facing the confrontation line, at a distance of around 100 metres from the location of AOGs. At around 13:00, one interviewee was able to see as "dense white-to-yellow smoke" spread 5 metres upwards and then between the buildings, 25 metres from their position. The interviewee saw the smoke without witnessing what caused it. The smell of the smoke was described as "very bad and disgusting". The interviewee reported the incident to their commander via hand-held short-range radio, and then started experiencing symptoms before collapsing. There was no recollection of where the person

collapsed and how they were rescued. The same interviewee woke up in Aleppo University Hospital, and was discharged days later. Afterwards, they were readmitted to Aleppo Military Hospital for a few more days. The interviewee was granted rest and recuperation (R&R) before returning to duty. During the interviews with the medical staff involved in treating patients coming from the three different locations, it was described that some casualties were sent directly to Aleppo Military Hospital, while others were taken to Al-Razi Hospital or Aleppo University Hospital. As a standard procedure, casualties who were SAA personnel were discharged from Aleppo University Hospital only to be taken to Aleppo Military Hospital for monitoring, follow-up, and administrative purposes.

(g) With regard to all three locations mentioned above, the origin of the smoke (mentioned as gas, smoke and cloud, and identified as a projectile by some and as a device by others) was not described. Neither the shape nor the size was mentioned by any interviewee. None of the interviewees provided a sketch or a drawing of the origin of the smoke. One interviewee stated that they felt the pressure released when this projectile/device impacted on the wall of the building where they were positioned. Based on their previous military experience, they concluded that because of the extent of the pressure, this device/projectile was either fired or projected. It has been mentioned by some interviewees that there was no explosion upon impact and that there was a hissing sound when the smoke was released. The smoke is described as either thick yellow-to-green or dense white-to-yellow, and spread upwards and sideways upon release. The smell of the smoke was described as very bad, foul, and disgusting. Some interviewees linked this smell to a locally available clean' g product often used in their homes, and branded as "Flash". Others described this smell as similar to chlorine, while one interviewee emphasised that "it was similar to a chlorine-based toilet cleaner, but stronger". Some interviewees also mentioned never having experienced such a smell before. One interviewee did not recall smelling anything.

(h) The means of respiratory protection of SAA personnel ranged from scarves over the face to full-face chemical protective masks with canisters. Some interviewees who used protective masks testified that they exhibited some of the same symptoms experienced by some of those without respiratory protection. Some of the same interviewees recalled seeing members of AOGs wearing "protective gas masks", without providing a detailed description.

(i) The symptoms common to all interviewees linked to the three aforementioned locations are the following: burning sensation in the eyes and throat, redness and tearing eyes, nose pain, fatigue, difficulty breathing, pressure in the chest, headache, vomiting, and dizziness. In some cases, interviewees reported to have lost consciousness during the incident. Over half of the casualties who were interviewed described that they had collapsed five to ten minutes following the release of the smoke

and fell unconscious, while others tried to help those who were affected and later collapsed. After waking up in the hospital, some casualties reported exhaustion, headache, and chest pain. Most casualties had no lasting symptoms one week after being discharged from the hospitals. Some were still experiencing minor symptoms upon discharge from the hospital.

(j) On 30 October 2016, at approximately 10:30, the first casualties arrived to Al-Razi Hospital, Aleppo University Hospital, as well as Aleppo Military Hospital. Aleppo University Hospital also reported receiving casualties on 31 October 2016. In total, this hospital received 63 casualties, mostly military personnel. On the day of the incident, Al-Razi Hospital received around 60 to 70 casualties that included both military personnel and civilians. Some of the soldiers who were previously treated in Al-Razi and Aleppo University Hospitals were then sent to Aleppo Military Hospital. This hospital received 60 soldiers in total on the day of the incident.

(k) All casualties received in Al-Razi and Aleppo University and Aleppo Military Hospitals were undressed, washed with soap and water, and then dressed in hospital gowns. In Al-Razi Hospital, the staff in charge of decontamination was "in a full gear, i.e. full protective suits, masks with filters, protective shoes and gloves". All patients in relation to the reported incident were triaged and sent to isolation rooms on the wards.

(l) At Al-Razi Hospital, some doctors noticed a smell coming from some casualties and others reported a strange smell in the emergency department. Some doctors described the smell as "similar to the smell of water in swimming pools". At Aleppo University Hospital, some doctors could not identify the "bad smell" coming from the casualties. The FFM interviewed a relevant specialist involved in the assessment of the activities of the hospitals. This interviewee mentioned that he experienced a chlorine-like smell in Aleppo University Hospital, when one of the casualties arrived there.

(m) In Aleppo Military Hospital, two members of the medical staff experienced what they described as a "bad smell", but were unable to identify it. Others, who did not experience any smell, said that "it can likely be due to the fact that the patients in relation to the reported incidents arrived from other hospitals and were being washed, while others were washed in Aleppo Military Hospital".

(n) One doctor from Aleppo University Hospital recalled being the first to come in contact with the first casualties arriving into the hospital. Approximately 30 minutes later, the doctor began experiencing a burning (heat) sensation in the hands and itchiness in the face. The doctor immediately requested that all casualties be washed and undressed before receiving any treatment.

(o) During interviews with the medical staff involved in treating patients coming from the three different locations, the common symptoms were described as such: lacrimation, rhinorrhoea, tingling sensation in the nose, burning sensation in the eyes and throat, and shortness of breath. Other symptoms were acute cough, headache, tightness of chest with dyspnoea, vomiting, numbness in the limbs and in some cases skin irritation. The casualties predominantly had mild symptoms, some were moderate, but none appeared to be life-threating. No fatalities were reported in relation to the incident.

(p) In the hospitals, medical tests and examinations were performed on the casualties. These included chest X-Rays, oxygen saturation, lung fields auscultation, and blood tests (electrolytes, urea, creatinine, and AChE). The overall results of all these tests appeared to be within normal values. Some patients had mild infiltration but this was assessed by the medical staff interviewed by the FFM to be due to smoking. Two patients had elevated urea and creatinine, but this returned to the normal range later on.

(q) In most cases, the treatment was described as being "conservative", focusing on treating the symptoms. Intravenous access was gained for all patients. Intravenous fluids, corticosteroids, and salbutamol inhalers were administered. Oxygen levels were also monitored. Some patients were described as having low blood oxygen saturation (SPO_2) levels. Some had "wheezing in the lungs upon auscultation", while one doctor mentioned that they were able to hear the wheezing externally. Oxygen treatment was used for respiratory support. Some patients were prescribed broad-spectrum antibiotics. The aforementioned relevant specialist mentioned that atropine injections were administered at Al-Razi Hospital.

(r) Most patients were discharged within one or two days, others stayed from three to five days, while the longest hospital stay was ten days. Most of the patients did not come back for follow-up and were discharged in good health. A few patients returned to the hospital after being discharged, complaining of dyspnoea and some neurological symptoms.

(s) The aforementioned relevant specialist also stated that the substance that might have caused the symptoms was not investigated due to the absence of a toxicology laboratory in Aleppo. Although this specialist made an assessment regarding this incident, a written report was not produced because there were no fatalities linked to the reported incident. He added that some clothing was collected from the patients by hospital administration and the police. Furthermore, he indicated that the police took soil samples from the area of the incident. No clarification regarding the fate of these samples had been received at the time this report was drafted.

8.29 Witness testimonies were also used to identify location data. During interviews witnesses were encouraged to explain their surroundings and events leading up to the

incident, as well as events immediately following it. This information was used to geolocate the witnesses, other groups described by the witnesses, and other key locations referred to. Open-source research was used to verify events where possible, such as the location of the front line on a particular date, and other key events referred to by witnesses. The descriptions of annotations marked on the map shown below are the following:

(a) location information provided by the witness, annotated in blue, was verified using multiple open sources;

(b) location information for the witness and group, annotated in yellow, is based purely on witness testimony;

(c) location information for the witnesses and group, annotated in green, was obtained from testimonies, a video, and open sources; and

(d) the front line information was obtained from multiple witness testimonies as well as open sources.

Figure 1
The neighbourhood of Al-Hamadaniyah, including Dahiyat al-Assad, and the 1070 and 3000 Apartments Projects in the city of Aleppo, Aleppo Governorate, Syrian Arab Republic

Environmental samples and analyses

8.30 The seven environmental samples and two blank samples created by the FFM team, and transported to the OPCW Laboratory during the second deployment, were analysed. The scope of analysis included scheduled chemicals, precursors, and degradation products. The results of the analyses did not show the presence of such chemicals in the samples. The report of the laboratory analysis of these samples can be found in Annex 7.

Biomedical samples and analyses

8.31 During its third deployment, the FFM was made aware of the existence and given access to 37 biomedical samples in relation to the incident.

8.32 Blood samples were taken from individuals connected to the reported incident by the medical staff of the relevant medical facilities. They were given to the Technical Committee of the authorities of the Syrian Arab Republic and were transported to the SSRC in Barzi. There, the blood samples were separated into 17 blood cell and 20 serum portions. They were also analysed to determine AChE level. The results of the analyses were provided to the team as described in subparagraph 8.24 (b).

8.33 Due to their limited quantity, it was agreed that the samples would not be split while the team secured and packaged them for transportation. The FFM team took custody and transported the biomedical samples back to the OPCW Laboratory during the fourth deployment. Based on the results of the laboratory analyses of the environmental samples in connection to the same reported incident, the biomedical samples were not analysed, as described in paragraph 8.21.

Analysis of a technical exploitation and weapon assessment

8.34 During its first deployment, the FFM was able to conduct a thorough technical weapon exploitation at the SSRC in Barzi on an unexploded munition collected by a group of specialists from the authorities of the Syrian Arab Republic. During the preliminary screening of the munition, a lightweight chemical detector (LCD 3.3) did not indicate the presence of any chemical warfare agent. X-ray images taken by the FFM displayed a conventional fragmentation internal design, including a solid fill in the head section of the munition. At the end of the technical exploitation, the FFM concluded that the munition was a mortar and was not indicative of a chemical weapon design or fill. Therefore, no further actions were taken. The full technical weapons exploitation report can be found in Annex 9.

Analysis of the reported incident in Karm Al-Tarrab of 13 November 2016

Analysis of medical information and assessment of patient symptoms

8.35 During its deployments, the FFM received the following medical information from the authorities of the Syrian Arab Republic:

(a) Hospital reports from Aleppo University Hospital and Aleppo Military Hospital. The medical report of Aleppo University Hospital confirmed that a large number of SAA personnel were affected by "toxic chemical gases". The medical report provided by Aleppo Military Hospital stated that on the date of the reported incident, their emergency department received 27 casualties "with cases of suffocation following the inhalation of a toxic gas". The reported signs and symptoms from the hospitals were similar and consistent, as follows: a burning sensation in the eyes, lacrimation, dyspnoea, tightness in the chest, fatigue, headache, dizziness, weakness in the limbs, nausea, and vomiting or retching. In Aleppo Military Hospital, the following symptoms were also reported: loss of consciousness, coughing and bradycardia. With regard to the treatment of the casualties, the report of Aleppo University Hospital mentions that the patients were washed, given oxygen, IV fluids and broad-spectrum antibiotics. According to the report of Aleppo Military Hospital, the conditions of the patients ranged from mild to medium, with the exception of four patients who needed further follow-up and monitoring. Both hospitals confirmed that there were no fatalities associated with this incident. The information contained in the reports of the two hospitals is consistent with the interview testimonies and the medical records in relation to the reported incident.

(b) During the second and fifth deployments, the FFM received several documents containing results of laboratory analyses of AChE level in blood samples of individuals connected to the reported incident. The results showed "normal AChE activity".

(c) List containing the names of the patients treated in the emergency departments in multiple hospitals, and their signs and symptoms. The team identified and, during the first and the fifth deployments, conducted interviews with five casualties. Similarly, the team identified and interviewed five key medical personnel.

(d) Twenty-five medical records of SAA personnel linked to the reported incident were provided to the FFM, all of them from Aleppo Military Hospital. The team made their photocopies in electronic versions and returned the original medical records. Several entries in the medical records are illegible, making the team unable to undertake a comprehensive comparison. Clarification of these entries was sought from medical staff during interviews, without success.

Analysis and assessment of incident reports

8.36 During its deployments, the FFM received the following documents:

(a) An incident report from the authorities of the Syrian Arab Republic, including a description of the incident in the area of Karm al-Tarrab and Google Earth® screenshot images showing the location of the reported incident, as well as the coordinates of the impact location. The report describes that the incident occurred on 13 November 2016 where "a number of soldiers from the Syrian Arab Armed Forces attempted to advance in the East of Aleppo (Karm al-Tarrab area), close to Al-Nayrab Airport" and who "were exposed to toxic gases coming from armed terrorist groups" causing their symptoms. The Technical Committee of the authorities of the Syrian Arab Republic, consisting of three individuals, was able to visit Aleppo "on 14 October 2016." The Committee visited the hospital to which casualties were taken, interviewed the hospital director, medical staff and patients connected to the reported incident. The Committee also visited areas close to the location of the incident. However, they were unable to visit the exact location of the reported incident, because of ongoing military activities at the time. The Committee received some samples from the location of the incident, including clothing belonging to the casualties, as well as swab samples connected to respiratory masks and filters used during the rescue of casualties. The Committee performed a fast chemical screening on some clothing samples belonging to the casualties. The result of the screening was not described in the report. Furthermore, the report states that samples were handed over to the SSRC in Barzi for laboratory analyses. The team assessed the incident report to get an overview of the sequence of events which formed the initial narrative of the reported incident. The incident report stated that the incident happened on 13 November 2016 and that the Technical Committee was able to visit Aleppo to investigate the incident that took place in Karm al-Tarrab "on 14 October 2016". This issue was discussed with the authorities of the Syrian Arab Republic, which confirmed that the date of the reported incident was 13 November 2016. On 4 April 2018, the FFM received an update report on the incident rectifying the date of the visit of the Technical Committee as 14 November 2016. The team also identified other issues that needed to be clarified, such as the exact location of the incident, the ongoing activities on the date of the incident, the equipment used for the fast chemical screening, and the fate of the samples. They were discussed during the meetings held between the FFM and the authorities of the Syrian Arab Republic throughout the deployments, as well as through correspondence. The team was able to identify the location of the reported incident through videos and Google Earth® screenshot images provided by the authorities of the Syrian Arab Republic. The ongoing activities on the date of the reported incident were clarified by cross-checking the information included in the relevant incident report with the interviews conducted with individuals identified by the team as connected with the incident. Furthermore, the authorities of the Syrian Arab Republic stated that the same equipment mentioned in the case of the

reported incident in Al-Hamadaniyah was used for the fast chemical screening.

(b) A list of names of doctors who were on duty on the date of the reported incident in Martyr Abdel Wahab Agha Hospital. This list was used to establish a link between the medical staff who were involved in the treatment of the casualties in connection to the reported incident. Given that the nature of the working hours of the medical staff is driven by operational needs, not all medical personnel involved in the treatment of the casualties in connection to the reported incident were mentioned on the list. The list includes only treating physicians. A doctor whose name is mentioned on this list stated during an interview that Martyr Abdel Wahab Agha Hospital is also known as the "Aleppo Military Hospital". This information was confirmed throughout other interviews and by reviewing medical records.

(c) The FFM was provided with Google Earth® screenshot images, including a description of areas of the reported incident. The team used them to identify the geographical location of the reported incident and significant features and objects in the area. These features and objects were used during the interview process to establish a link between the positions of interviewees during the reported incident.

8.37 During the third deployment, the team received a comparative study compiled by a group of experts from the Technical Committee of the authorities of the Syrian Arab Republic. This study compared the effects of riot control agents to the effects of "toxic gases" used by terrorist groups in several reported incidents, including Karm al-Tarrab. It also contained references to the names and codes of chemicals mentioned by the authorities of the Syrian Arab Republic. The document states that soldiers who were affected during the reported incidents had displayed the same symptoms that occur after exposure to riot control agents. The FFM assessed the content of the document and concluded that it is largely based on open-source literature. In some cases the symptoms exhibited by the casualties corresponded with the effects described in the document.

8.38 During its first deployment, the FFM team was provided with a document listing several environmental samples, two of which were linked to the reported incident in Karm al-Tarrab. During the first and third deployments, the authorities of the Syrian Arab Republic provided access to all environmental samples stored at the SSRC in Barzi. However, the team was unable to take custody of the two aforementioned samples. This issue was discussed with the authorities of the Syrian Arab Republic during the fifth deployment conducted by the FFM. No clarification had been received at the time this report was drafted.

Analysis and assessment of electronic data

8.39 During its deployments, the FFM received the following electronic data:

(a) Three videos. The first video footage shows what appears to be a hospital or an area being used as a hospital, as several items of medical furniture, equipment, supplies, and paraphernalia, along with people wearing hospital-type scrubs. The person filming moves through a corridor area and into two separate rooms accessed from the corridor. The rest of the people in the video appear to be military personnel, as most are dressed in military fatigues and several carry small arms. Some of the military personnel are treated as patients, while others appear unaffected. Of those who appear to be patients, six are initially lying supine on the floor in the corridor and one is lying on the floor in one of the rooms. At the beginning of the video, five are on individual examination beds, two situated in the corridor, two in a room with the aforementioned person on the floor, and one in the second room. During the video, one of the patients from the corridor floor is carried, conscious, into the second room and placed onto another empty examination bed. Retching can be heard. All the people in the video are male, with the identifiable patients probably in their twenties or thirties. From this video, the FFM was unable to confidently assess the symptoms that the casualties were displaying. One patient appears to have abnormal breathing and another is treated with a nebuliser mask. Some of these symptoms were mentioned by interviewees and recorded in medical information provided to the team. After conducting a metadata analysis of the video, the FFM was unable to identify the time, date, or location. None of the casualties interviewed by the FFM in relation to the reported incident recalled a similar event as that shown in the video. The team was unable to interview any further witnesses connected to the reported incident.

(b) The second video contains footage of soldiers exiting an area of ongoing military activities. One of them is wearing a gas mask; others are covering their faces with pieces of cloth. None appear to be experiencing any severe clinical symptoms, while some are coughing and retching. The soldiers move unaided, apart from one who is seen being assisted. Later in the video, two soldiers are seen being assisted onto the back of a pickup truck where one soldier is already lying down. At the end of the video, the pickup truck can be seen driving away. After conducting a geolocation analysis, the FFM was able to accurately identify the location and confirm that it is the same location as referred to in witness testimonies and incident reports. However, neither the date nor the time could be verified.

(c) The third video is a news report from Russia Today Arabic, stating that "besieged armed groups fired devices containing toxic gases in eastern neighbourhoods" of Aleppo. The news report also interviews a civilian who states that "he smelled an odour", adding that his family and himself experienced symptoms such as "tearing of the eyes". After conducting a geolocation analysis, the FFM was able to accurately identify the location and confirm that it is the same location as the video in subparagraph 8.39 (b).

(d) Four photographs depicting people dressed in military fatigues.

(i) Photograph one depicts one male seated on the ground propped/leaning against a tiled wall. The image is blurred and offers little further opportunity for assessment.

(ii) Photograph two depicts two males on the ground. The one in the centre frame is seated cross-legged, with his back against a tiled wall, near a door or window. He has his eyes closed and appears to have a venous cannula in the left cubital fosse area. To his right in the left of the photograph is a male lying supine, next to the tiled wall, with his legs crossed. There is the partial image of someone else's hand and leg on the right edge of the photograph. The image offers little further opportunity for assessment.

(iii) Photograph three appears to depict the same scene as photograph two but from a wider angle, offering greater clarity. The two males are positioned as previously and the third person on the right is shown in full. The person is in almost a right lateral, recumbent position obscuring the face. Other people standing are also visible. There appear to be several wet patches on the tiled floor and some form of plastic container can be partially seen. The image offers little further opportunity for assessment.

(iv) Photograph four depicts two males on the ground seated against a tiled wall. Each has a weapon propped against the wall next to them. The one in the foreground has a cloth in his left hand held against his face. The male to the left of the photograph in the background has his eyes closed. There is military webbing or ammunition pouches between them. There are several wet patches on the concrete floor. The image offers little further opportunity for assessment.

Analysis and assessment of interviews

8.40 Over the course of five deployments, the FFM conducted 10 interviews with casualties and medical personnel linked to the incident.

8.41 The prevailing narrative established by interviews with casualties in relation to the aforementioned incident is as follows:

(a) The interviewees described that, some 10 to 15 days before the reported incident, members of AOGs were "taunting" SAA soldiers that a large-scale attack was imminent.

(b) The incident is described to have taken place in the area of Karm Al–Tarrab in the Al-Nayrab neighbourhood. According to the testimonies of the interviewees, on 13 October 2016 at around 14:00 to 15:30 a group of 20 to 30 SAA personnel were instructed to break into a ground floor building containing two rooms on the confrontation line. The position of AOGs was described as 3 to 4 metres away from that building and 50 to 70 metres

away from the "Al-Barrad" military point, which was described as a large two-storey building.

(c) A group of 15 SAA personnel entered "Al-Barrad", while a subgroup of seven SAA personnel entered the ground floor building. The first group was tasked with monitoring the location of the subgroup. Members of the AOGs were described as wearing "face masks with filters". Fighting broke out between the SAA and AOGs, and included the use of mortars, tanks, rockets and "gas cylinders".

(d) At around 15:30, a "device was thrown by hand" towards SAA personnel and landed inside one of the rooms where the subgroup was located. Upon landing, the device did not detonate, but "spun around releasing a white-to-yellow smoke". Neither the shape nor the size of the device were mentioned by any interviewee. The released smell was described as nauseating, disgusting, very bad and similar to the smell of cleaning products. One interviewee said that the smell was similar to the smell of a cleaning product branded as "Eau de Javel", which is a bleach solution used for disinfection.

(e) The backup team from "Al-Barrad" was called via radio and the casualties were evacuated to a nearby evacuation point. Some witnesses involved in the rescue operation said that they collapsed and had to be themselves rescued and evacuated. Some SAA personnel exposed to the smoke, with or without respiratory protection, collapsed. One of the interviewees reported that he had a gas mask handy but was too weak to get it on when he began feeling a burning sensation. The casualties who were positioned in "Al-Barrad" were affected as well, "because the wind was blowing in their direction".

(f) Casualties were transported to the airport dispensary, where first aid was provided and minor cases were treated, including administration of IV fluid and intramuscular injections. Twenty-eight casualties described as being in the severest condition were, later on, transferred to the Aleppo Military Hospital for treatment.

(g) As a result of the described events, SAA personnel had to retreat. Several civilians who were in the area at that time, some as close as 100 to 200 metres of the reported incident, were also affected and seen at the Aleppo Military Hospital.

(h) Symptoms that were common among SAA personnel included: tearing eyes, blurred vision, a burning sensation in the throat, fatigue, weakness in the lower limbs, itchiness, twitching, difficulty breathing, suffocation, frothing at the mouth, chest pains, vomiting, and loss of consciousness.

(i) Some casualties received at the Aleppo Military Hospitals were undressed, washed with soap and water, and then dressed in hospital gowns. The

clothes of some casualties were collected and labelled with the name of their names. The interviewees were unsure of the whereabouts of their clothing. No clarification had been received at the time this report was drafted.

(j) In most cases, the treatment was described as conservative with a focus on treating the symptoms. Intravenous access was gained for all patients. IV fluids and salbutamol inhalers were administered. Oxygen levels were also monitored and supplemental oxygen was provided, as needed. Casualties reported that they had received injections but were uncertain of their nature. Moreover, blood samples were taken and X-rays conducted.

(k) Casualties stayed in the hospital between one to five days. After being discharged, casualties reporting persistent shortness of breath were given nebulizers to continue their course of treatment. Furthermore, in some cases post-discharge symptoms included sore throat, fatigue, irritation in the throat, and night coughing. Some casualties were discharged back to their duty stations and others were given seven to twelve days for R&R.

(l) Interviewees also stated that approximately 10 days after the reported incident, SAA personnel, some of whom had been involved in the reported incident, returned to the building. Their aim was to "gather evidence of this gas attack", including environmental samples from the area. IEDs in the building and snipers in the area resulted in several casualties and fatalities. Therefore, no samples were collected. Nevertheless, SAA personnel were able to see remnants of a "device" and its landing point. The latter was described as covered with yellowish dust. They also mentioned the presence of a lingering bad and unpleasant smell, similar to what they experienced during the reported incident. The building collapsed at a later date, which was reported to be somewhere around the end of November 2016.

8.42 Witness testimonies were also used to identify location data. During interviews, witnesses were encouraged to explain their surroundings and the events leading up to the incident, as well as the events immediately following it. This information was used to geolocate the witnesses, other groups described by the witnesses, and other key locations referred to. Open-source information proved insufficient to provide additional verification of the information.

Figure 2
Karm al-Tarrab in the city of Aleppo, Aleppo Governorate, Syrian Arab Republic

Environmental samples and analysis

8.43 The FFM did not receive any environmental samples related to the reported incident in Karm al-Tarrab.

Biomedical samples and analyses

8.44 During its third deployment, the FFM was made aware of the existence of and given access to nine biomedical samples in relation to the reported incident.

8.45 Blood samples were taken from individuals connected to the reported incident by the medical staff of the relevant medical facilities. They were given to the Technical Committee of the authorities of the Syrian Arab Republic and were transported to the SSRC in Barzi. There, the blood samples were separated into six blood cell and three serum portions. They were also analysed to determine AChE level. The results of the analyses were provided to the team, as described in subparagraph 8.35 (b).

8.46 Due to their limited quantity, it was agreed that the samples would not be split while the team secured and packaged them for transportation. The FFM transported the biomedical samples back to the OPCW Laboratory during the fourth deployment. As described in paragraph 8.21, biomedical samples were not analysed.

9. CONCLUSIONS

9.1 During the course of five deployments and throughout the post-deployment activities, the FFM gathered, reviewed, and analysed all available information regarding incidents of alleged use of toxic chemicals as weapons, as reported in notes verbales No. 109 (dated 17 November 2016) containing correspondence No. 259 (dated 16 November 2016) and No. 113 (dated 29 November 2016) containing correspondence No. 9551 (dated 29 November 2016) received from the Syrian Arab Republic.

9.2 The FFM examined and collected copies of documentation and records provided by the authorities of the Syrian Arab Republic, as well as by the Russian Federation. These included written incident and technical reports, medical information, and electronic data relevant to the reported incidents.

9.3 In order to establish a prevailing narrative pertaining to the reported incidents, the FFM conducted interviews with persons connected with the reported incidents and identified by the team upon review of the aforementioned documentation. These persons included eyewitnesses of the reported incidents, those who underwent treatment, and treating medical personnel.

9.4 The authorities of the Syrian Arab Republic provided access to environmental and biomedical samples pertinent to the reported incidents. The FFM conducted an examination of the environmental samples in accordance with approved OPCW procedures and using approved equipment, to make a preliminary assessment to identify the method of transportation and the scope of laboratory analysis of these samples.

9.5 The environmental and biomedical samples were packaged and transported to the OPCW Laboratory for analysis. When applicable, the team provided the authorities of the Syrian Arab Republic with a duplicate or a portion of the samples.

9.6 The environmental samples were analysed at the OPCW Laboratory to confirm the absence or presence of scheduled chemicals. Biomedical samples were not analysed by the OPCW Laboratory.

9.7 The authorities of the Syrian Arab Republic also provided access to an unexploded munition reported to have been collected in Karm al-Tarrab. The team conducted a technical exploitation of this munition.

9.8 The FFM was unable to visit the locations of both incidents to conduct site exploitation, including environmental sample collection. Furthermore, the FFM received no substantial information or evidence related to the origin of the smoke.

9.9 With regard to the incident that took place in the neighbourhood of Al-Hamadaniyah, the FFM reviewed, assessed, and analysed all testimonies and documentation. The FFM found consistency in the statements of the casualties and treating medical staff, all of whom described similar events and symptoms. The narrative established by the team through interviews is consistent with the information included in the incident

report. Although roughly 60 casualties from the same location, including civilians, presented with similar signs and symptoms at the same time, none suffered any long-term debilitating effects and no fatalities occurred. Neither the general clinical presentation of those affected nor the visual and olfactory description of the smoke clearly indicated any specific chemical. Neither the results of the laboratory analyses of the environmental samples, nor the results of the laboratory analyses of the biomedical samples conducted by the authorities of the Syrian Arab Republic, identified the presence of any scheduled chemicals.

9.20 In relation to the incident that took place in the area of Karm al-Tarrab, the FFM also reviewed, assessed, and analysed all testimonies and documentation. The statements of the casualties and treating medical staff were consistent, given that similar events and symptoms were described. Furthermore, the information included in the incident report is similar to the narrative established by the team. Although 40 casualties from the same location presented with similar signs and symptoms at the same time, none suffered any long-term debilitating effects and no fatalities occurred. Neither the general clinical presentation of those affected, nor the visual and olfactory description of the smoke clearly indicated any specific chemical. The results of the laboratory analyses of the biomedical samples conducted by the authorities of the Syrian Arab Republic did not identify the presence of any scheduled chemicals.

9.21 On the basis of the information received and analysed, the prevailing narrative of the interviews, and the results of the laboratory analyses, the FFM cannot confidently determine whether or not a specific chemical was used as a weapon in the incidents that took place in the neighbourhood of Al-Hamadaniyah on 30 October 2016 and in the area of Karm al-Tarrab on 13 November 2016. The FFM is of the view that the persons affected in the reported incident may, in some instances, have been exposed to some type of non-persistent, irritating substance.

10. SIGNATURE

This report of the Fact-Finding Mission was submitted on 2 July 2018 in English.

[Signed]
Kalman Kallo
Mission Leader

Annex 1

FACT-FINDING MISSION MANDATED AIMS AND OPERATIONAL INSTRUCTIONS

MANDATED AIMS

1.1 Gather facts regarding the incident of alleged use of toxic chemicals as a weapon, as detailed in notes verbales No. 109 (dated 17 November 2016), No. 113 (dated 29 November 2016), and No. 21 (dated 7 March 2018) received from the Syrian Arab Republic, mindful that the task of the FFM does not include the question of attributing responsibility for the alleged use.

1.2 Examine, and if deemed necessary by the FFM team, take samples that are in the possession of the Government of the Syrian Arab Republic which were reported to have been taken from the incident sites.

1.3 If applicable, and subject of approval of the Director-General, conduct a visit to the affected areas of the alleged use of toxic chemicals and collect environmental samples connected to the incident sites.

1.4 Report to the Director-General upon conclusion of FFM activities.

OPERATIONAL INSTRUCTIONS

1.5 To meet the above requirements, the FFM team should perform, inter alia, the following activities:

(a) review and analyse all available information pertaining to the reported incident of alleged use of toxic chemicals a weapon;

(b) collect testimonies from persons alleged to have been affected by the use of toxic chemicals as a weapon, including those who underwent treatment, eyewitnesses of the alleged use of toxic chemicals, medical personnel, and other persons who had treated or come into contact with persons who may have been affected by the alleged use of toxic chemicals;

(c) examine and, if possible, collect copies of the hospital records, including patient registers, treatment records, and any other relevant records, as deemed necessary;

(d) examine and, if possible, collect copies of any other documentation and records deemed necessary;

(e) take photographs and examine and, if possible, collect copies of video and telephone records;

(f) undertake, as necessary, the examination of samples using approved OPCW methods and equipment, to make a preliminary determination of the chemical agent. Provide the Government of the Syrian Arab Republic with a duplicate or portion of each sample;

(g) record the handover of samples and ensure that they are treated in accordance with the established procedures, including the provisions on chain of custody, as applicable;

(h) undertake, as necessary, non-destructive evaluation of munitions alleged to have been used during incidents under investigation using approved OPCW methods, to determine the internal configuration of the items prior to sampling activities;

(i) if feasible, take samples of the fill material to confirm presence or absence of chemical agent fill in the munitions alleged to have been used during the incidents under investigation. Provide the Government of the Syrian Arab Republic with a duplicate or portion of each sample; and

(j) examine available evidence on the origin of the munitions, including historical evidence as available, and obtain additional information to support a determination of the origin of the items. This may include the identification of recognisable labels, markings, design features of the munitions, and a review of on-site non-destructive evaluation measurements.

Annex 2

LIST OF CORRESPONDENCE WITH THE AUTHORITIES OF THE SYRIAN ARAB REPUBLIC

Name	DCN	Date	Remarks
SAR NV 109	#0180189	21/11/2016	Information regarding toxic gas attacks
SAR NV 113	#0182081	29/11/2016	Information regarding chemical weapons
Letter to SAR, L/ODG/207468/16	NA	07/12/2016	Main body deployment
SAR NV 26	#0125679	18/04/2017	Information containing footage from area 1070 – 3000 Apartments Projects regarding use of chlorine gas
NV to SAR, NV/ODG/212724/17	NA	17/11/2017	Main body deployment
SAR NV 124	*0167003	22/11/2017	FFM team deployment
NV to SAR NV/ODG/213949/18	NA	22/02/2018	Request to provide more information
SAR NV 21	D020066	07/03/2018	Information in relation to incidents in 1070-3000 Apartments Projects and Karm al-Tarrab, including containing names of people to be interviewed,
NV to SAR, NV/ODG/214355/18	NA	26/03/2018	Main body deployment

Annex 3

LIST OF INFORMATION RECEIVED FROM OR HANDED OVER TO THE AUTHORITIES OF THE SYRIAN ARAB REPUBLIC DURING DEPLOYMENTS

First Deployment				
No.	**DCM**	**Description**	**Date Received/Handed Over**	
1	6666/026	70 Medical records	15/12/2016	Received
2	6666/027	List of samples held in the SSRC in Barzi (Arabic)	15/12/2016	Received
3	6666/029	SD card containing sampling photos	16/12/2016	Handed over
4	6666/030	List of samples secured in the SSRC in Barzi	17/12/2016	Handed over
5	6666/036	Document on the use of toxic gases by AOG in Aleppo Karm al-Tarrab	17/12/2016	Received
6	6666/037	Document on the use of toxic gases by AOG in Aleppo Al-Hamadaniyah	17/12/2016	Received
Second Deployment				
No.	**DCM**	**Description**	**Date Received/Handed Over**	
1	6666/045	SD card containing the copies of samples recovery photos	10/01/2017	Handed over
2	6666/041	List of seals on samples for off-site analysis	10/01/2017	Handed over
3	6597/038	List of interviewees	12/10/2016	Handed over
4	6597/043	20 medical records - original	16/10/2016	Received
5	6597/044	Copy of 1 medical record	16/10/2016	Received
6	6597/046	List of seals - samples in joint custody	17/10/2016	Handed over
Third Deployment				
No.	**DCM**	**Description**	**Date Received/Handed Over**	
1	7037/032	Memo to SAR NA : Request for information	09/12/2017	Handed over
2	7037/047	Memo to SAR NA: Update	12/12/2017	Handed over
3	7037/049	AChE – result of analyses 30/10/2016	13/12/2017	Received
4	7037/050	Memo to SAR NA: Request for information	14/12/2017	Handed over
5	7037/051	Memo to SAR NA: Request for information	14/12/2017	Handed over
6	7037/056	List of seals applied on the blood samples in the SSRC Barzi	16/12/2017	-
7	7037/058	1 SD Card – photos of securing samples in the SSRC Barzi	16/12/2017	-
8	7037/059	AChE – result of analyses 03/11/2016	16/12/2017	Received
9	7037/060	AChE – result of analyses 03/11/2016	16/12/2017	Received
10	7037/061	Reference to names and codes of chemicals	16/12/2017	Received
11	7037/062	Scientific Comparative study on the effects of toxic gases used by AOGs in several incidents including Al-Hamadaniyah and Karm al-Tarrab	16/12/2017	Received
12	7037/063	AChE – result of analyses 20/11/2016	16/12/2017	Received

Fourth Deployment				
No.	**DCM**	**Description**	**Date Received/Handed Over**	
1	7061/010	Memo to SAR NA: Request for meeting and visits	03/01/2018	Handed over
2	7061/014	1 SD Card – photos of samples repacking and recovery in the SSRC Barzi	11/01/2018	Handed over
3	7061/015	List of seals on blood samples for off-site analysis	11/01/2018	Handed over
4	7061/016	List of seals on environmental samples for off-site analysis	11/01/2018	Handed over
5	7061/071	List of samples with AChE results of analyses	11/01/2018	Received
Fifth Deployment				
No.	**DCM**	**Description**	**Date Received/Handed Over**	
1	7153/018	Memo to SAR NA: Request for meeting	27/03/2018	Handed over
2	7153/030	Package about Karm al-Tarrab incident on 13/11/2016	04/04/2018	Received
3	7153/031	Package about Al-Hamadaniyah, 1070-3000 Apartments Projects, Academy, Manian incident on 30/10/2016	04/04/2018	Received

Annex 4

LIST OF CORRESPONDENCE WITH THE AUTHORITIES OF THE RUSSIAN FEDERATION

Name	DCN	Date	Info
Data Laboratory Analysis	6666/069	30/03/17	Data of environmental samples analysis updated into OPCW Proficiency Testing format

Annex 5

LIST OF SAMPLES TRANSPORTED FOR OFF-SITE ANALYSIS

Second Deployment – Environmental Samples			
No.	**Sample Code**	**Description**	**Incident place**
10	10BLS	Organic sample (DCM) with soil SAR	Al-Hamadaniyah
11	11SLS	Mud mixed with DCM - SAR	
12	12SLS	Soil from asphalt with DCM - SAR	
13	13SLS	Dry soil from apartment - SAR	
14	14SDS	Clothing from soldier room - SAR DCM extract	
15	15WPS	Wipe sample in DCM - SAR	
16	16SLS	Dry soil from building column - SAR	
23.	23WPB	DCM solution used by SAR for wipes, swab and liquid samples	**OPCW Blank*
24.	24SDB	DCM blank for 14SDS 15 WPS and 21 WPS	

Fourth Deployment – Environmental Samples			
No.	**Sample Code**	**Description**	**Incident Place**
1	01SDS	Clothing belonged to 3 persons	Al-Hamadaniyah
2	02SDS	Clothing – uniform of one person	Al-Hamadaniyah
3	03SDS	Clothing – uniform of one person	Al-Hamadaniyah
4	04SDS	Clothing – uniform of one person	Al-Hamadaniyah
5	05SDS	Clothing – uniform of one person	Al-Hamadaniyah
6	06SDS	Clothing – uniform of one person	Al-Hamadaniyah
7	07SDS	Clothing – uniform of one person	Al-Hamadaniyah
8	08SDS	Clothing – uniform of one person	Al-Hamadaniyah

Fourth Deployment – Biomedical Samples				
No.	**Sample Code**	**ID**	**Description**	**Incident Place**
1	01BDS	LFB	Blood with EDTA	Karm al-Tarrab
2	02BDS	01F	Blood with EDTA	Karm al-Tarrab
3	03BDS	LM0	Blood with EDTA	Karm al-Tarrab
4	04BDS	LFB	Blood with Heparin	Karm al-Tarrab
5	05BDS	01F	Blood with Heparin	Karm al-Tarrab
6	06BDS	LM0	Blood with Heparin	Karm al-Tarrab
7	07SRS	LFB	Serum	Karm al-Tarrab
8	09SRS	01F	Serum	Karm al-Tarrab
9	08SRS	LM0	Serum	Karm al-Tarrab
10	10BDS	R0J	Blood with EDTA	Al-Hamadaniyah
11	11BDS	Z0F	Blood with EDTA	Al-Hamadaniyah
12	12BDS	Q5K	Blood with EDTA	Al-Hamadaniyah
13	13BDS	R2M	Blood with EDTA	Al-Hamadaniyah
14	14BDS	K32	Blood with EDTA	Al-Hamadaniyah
15	15DBS	T2F	Blood with EDTA	Al-Hamadaniyah
16	16BDS	F4B	Blood with EDTA	Al-Hamadaniyah

Fourth Deployment – Biomedical Samples				
No.	**Sample Code**	**ID**	**Description**	**Incident Place**
17	17BDS	AB0	Blood with EDTA	Al-Hamadaniyah
18	18BDS	SN4	Blood with EDTA	Al-Hamadaniyah
19	19BDS	TQ3	Blood with EDTA	Al-Hamadaniyah
20	20BDS	4DB	Blood with EDTA	Al-Hamadaniyah
21	21BDS	EM3	Blood with EDTA	Al-Hamadaniyah
22	22BDS	R03	Blood with EDTA	Al-Hamadaniyah
23	23BDS	JC1	Blood with EDTA	Al-Hamadaniyah
24	24BDS	HT1	Blood with EDTA	Al-Hamadaniyah
25	25BDS	N52	Blood with EDTA	Al-Hamadaniyah
26	26BDS	SA1	Blood with EDTA	Al-Hamadaniyah
27	27SRS	TQ3	Serum	Al-Hamadaniyah
28	28SRS	R0J	Serum	Al-Hamadaniyah
29	29SRS	F4B	Serum	Al-Hamadaniyah
30	30SRS	K32	Serum	Al-Hamadaniyah
31	31SRS	HT1	Serum	Al-Hamadaniyah
32	32SRS	JC1	Serum	Al-Hamadaniyah
33	33SRS	Q5K	Serum	Al-Hamadaniyah
34	34SRS	SA1	Serum	Al-Hamadaniyah
35	35SRS	T3B	Serum	Al-Hamadaniyah
36	36SRS	R03	Serum	Al-Hamadaniyah
37	37SRS	KB9	Serum	Al-Hamadaniyah
38	38SRS	SN4	Serum	Al-Hamadaniyah
39	39SRS	4DB	Serum	Al-Hamadaniyah
40	40SRS	Z0F	Serum	Al-Hamadaniyah
41	41SRS	EM3	Serum	Al-Hamadaniyah
42	42SRS	N52	Serum	Al-Hamadaniyah
43	43SRS	AB0	Serum	Al-Hamadaniyah
44	44SRS	R2M	Serum	Al-Hamadaniyah
45	45SRS	SPM	Serum	Al-Hamadaniyah
46	46SRS	T2F	Serum	Al-Hamadaniyah

Annex 6

SELECT SAMPLE PHOTOGRAPHS

Figure 3: Environmental samples provided to the FFM during its first deployment at the SSRC in Barzi

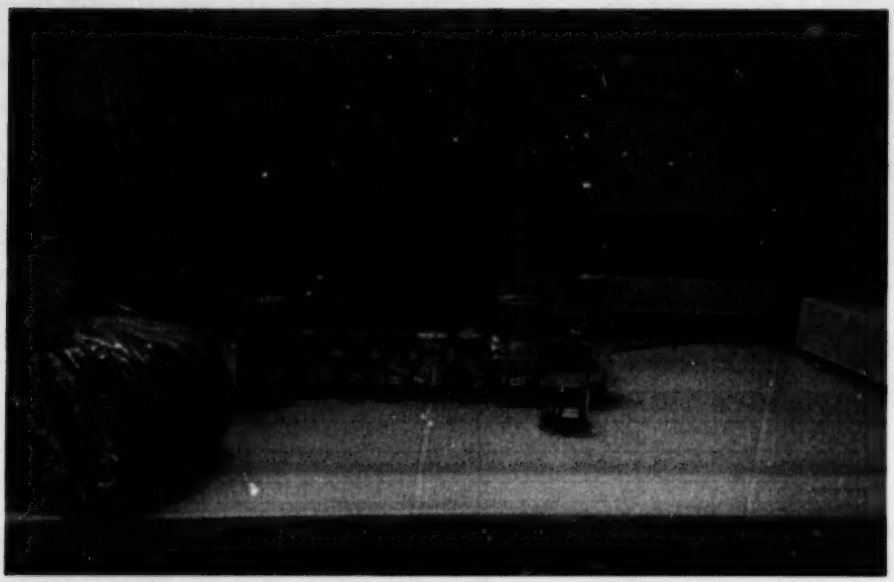
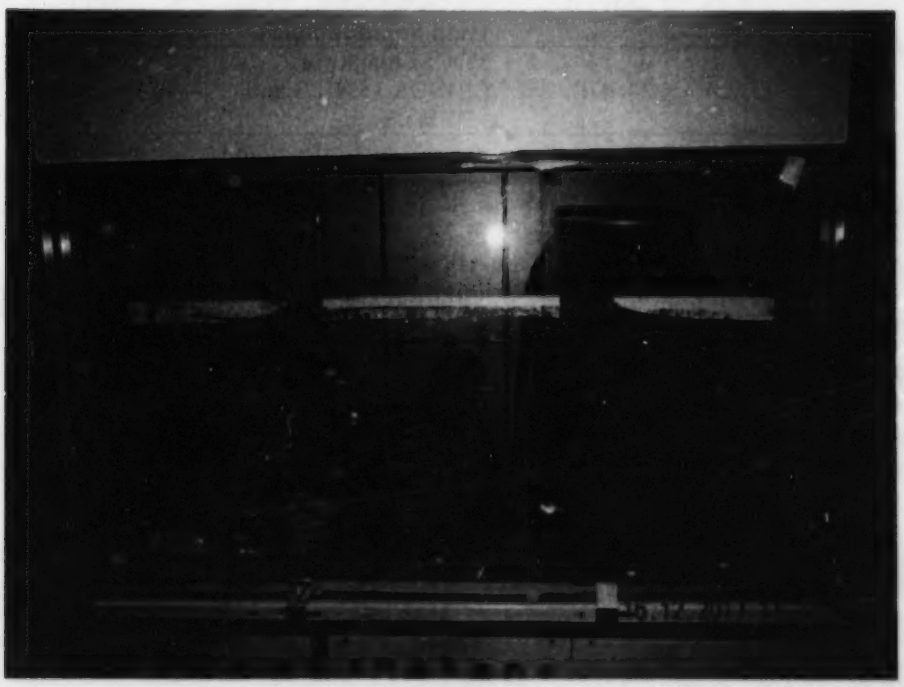


Figure 4: Environmental samples provided to the FFM during its third deployment at the SSRC in Barzi

Figure 4: Biomedical samples repacked by the FFM during its third deployment at the SSRC in Barzi

Figure 5: Environmental samples packed and secured under OPCW seals and left at the SSRC in Barzi



Annex 7

REPORT ON THE ANALYSIS OF FACT-FINDING MISSION SAMPLES RELATED TO THE ALEPPO INCIDENT, RETURNED BY TEAM BRAVO IN JANUARY 2017

10 March 2017
Hugh Gregg, Head, OPCW Laboratory

Executive Summary
The environmental samples returned by FFM team Bravo have been analysed by the OPCW Laboratory.
The following table summarises the findings for a subset of the samples.

Incident place	No.	Sample Code	Description	Results
Aleppo Al-Hamadaniyah	10	10BLS	Organic sample (DCM) with soil	No findings
	11	11SLS	Mud mixed with DCM	Elemental s only
	12	12SLS	Soil from asphalt with DCM	Fuel oil only
	13	13SLS	Dry soil from apartment	No findings
	14	14SDS	Clothing from soldier room - DCM extract	No findings
	15	15WPS	Wipe sample in DCM	No findings
	16	16SLS	Dry soil from building column	No findings
OPCW Blank	23	23WPB	DCM solution used by SAR for wipes, swab and liquid samples	No findings
	24	24SDB	DCM blank for 14SDS 15 WPS and 21 WPS	No findings

Narrative
The FFM team returned 26 environmental samples in connection with a number of incidents to the OPCW Laboratory on Friday 13 January 2017.
All 26 environmental samples were analysed at the OPCW Laboratory.
All transfers of samples and materials were documented, and the chain of custody of all samples was maintained.
The OPCW Laboratory analysed 26 samples following its standard practices. All gas chromatography/mass spectrometry data was analysed using AMDIS and OPCW and commercial databases.
The scope of analysis included scheduled chemicals, precursors, and degradation products, as well as the aim to gain further understanding of the characteristics of the sample

Results
Elemental sulfur (not a scheduled chemical) was found in mud sample 11SLS and fuel oil was found in the soil sample from asphalt 12 SLS.
Apart from the aforementioned, the results of analysis for samples related to the Aleppo
1070 incident did not show any relevant chemicals.

Annex 8

REPORT ON THE ANALYSIS OF FACT-FINDING MISSION SAMPLES RELATED TO THE ALEPPO INCIDENT (RETURNED BY TEAM BRAVO IN JANUARY 2017)

19 June 2018
Marc-Michael Blum, Head, OPCW Laboratory

Executive Summary
The environmental samples returned by the fourth deployment of FFM team Bravo have been analysed by the OPCW Laboratory.
The following table summarises the findings related to environmental samples (clothing).

Fourth Deployment – Environmental Samples				
No.	**Sample Code**	**Description**	**Incident Place**	**Results**
1	01SDS	Clothing belonged to 3 persons	Al-Hamadaniyah	No findings
2	02SDS	Clothing – uniform of one person		No findings
3	03SDS	Clothing – uniform of one person		No findings
4	04SDS	Clothing – uniform of one person		No findings
5	05SDS	Clothing – uniform of one person		No findings
6	06SDS	Clothing – uniform of one person		No findings
7	07SDS	Clothing – uniform of one person		N,N-Dimethylamino ethanol (CAS 108-01-0)
8	08SDS	Clothing – uniform of one person		No findings

Narrative
The FFM team returned to the OPCW Laboratory eight environmental samples (clothing) related to the incident in Al-Hamadaniyah. The OPCW Laboratory took custody of the samples on 29 January 2018 and all eight environmental samples were analysed at the OPCW Laboratory. All transfers of samples and materials were documented, and the chain of custody f all samples was maintained.
The OPCW Laboratory analysed eight samples following its standard practices. All gas chromatography/mass spectrometry data was analysed using AMDIS and OPCW and commercial databases.
The scope of analysis included scheduled chemicals, precursors and degradation products, as well as the aim to gain further understanding of the characteristics of the sample. A specific focus was on (non-scheduled) riot control agents and their degradation products. Findings of other non-scheduled irritating chemicals would have been reported as well but none were found during the course of analysis.

Results
N,N-Dimethylaminoethanol (CAS 108-01-0) was found in sample 07SDS. This chemical is explicitly exempted from Schedule 2.B.11. Its presence in the sample can be explained as it is widely used in the synthesis of dyestuffs and textile auxiliaries as well as surfactants and

detergents. As no corresponding (organo)phosphorus chemicals were detected, the chemical is not related to a V-type nerve agent.

Apart from the aforementioned, the results of analysis did not show any chemicals related to the Chemical Weapons Convention and the scope of analysis.

Annex 9

TECHNICAL WEAPONS EXPLOITATION REPORT

Location: Barzi, Syrian Arab Republic (SSRC – Institute 6000)
Date: 16 December 2016
Time: 13:30
Nomenclature/Munition ID: suspected CW Munition
Country of Origin/Found: Recovered from Aleppo 1070 Apartments Project

Team Chain of Command:

1. FFM Team Leader
2. Technical Weapons Exploitation Team Leader

Personnel Make-up of the Team:

1. Munitions Assessment/NDE Lead
2. Munitions Assessment/NDE
3. Analytical Chemist, Sampling
4. Health and Safety Specialist, Safety and Decontamination

Equipment:

1. **Measuring Tools:**
   a. Tape Measure
   b. Steel Callipers (inside & outside)
   c. Scale

2. **Assessment Equipment:**
   d. RTR-4N (with XRS-3 & XRS-4 X-ray Sources)
   e. Quantum UPE
   f. LCD 3.3
   g. Calid Paper

3. **Photography Equipment:**
   h. Digital Camera (2)
   i. Tripod

4. **Leak, Seal, and Packaging Equipment:**
   j. Plaster-of-Paris
   k. Large Plastic Bags

l. Duct Tape
m. Rags

5. Decontamination:

n. Shuffle Pit Tray
o. Buckets
p. BX-24
q. Fast Act

6. Other Equipment:

r. Sand Bags
s. Table
t. Tarpaulin (drop cloth)
u. Leather Gloves
v. Various Tools

Technical Data Checklist

1. Complete Round

a. Model: Unknown
b. Type: Projectile
c. Calibre: 66 mm
d. Condition: Fired but failed to function as designed
e. Overall Length (with fuze): No fuze present
f. Overall Weight: ≈ 1 kg
g. Fuze Model: No fuze present, explosive fill visible
h. Fuze Type: N/A

2. Projectile Model:

a. Overall Length (without fuze): 366 mm
b. Length (with screws protruding from base of stabiliser boom): 370 mm
c. Adapter Length (visible): No adapter present
d. Adapter Length (overall): N/A
e. Ogive Length:
    i. 155 mm (to main body joint)
    ii. 27 mm (to first seam)
f. Bourrelet Length: N/A
g. Number of Gas Checks: 0
h. Body Length: 155 mm

i. Stabiliser Boom Length (visible):

j. Stabiliser Boom Length (overall): 110 mm

k. Fin Length: 33 mm

l. Number of Fins: 9*

**Three screws protruding from base of fins – possibly used for electrically static firing munition*

m. Diameter at Fuze Well: 44 mm

n. Adapter Diameter (maximum): N/A

o. Adapter Thread Diameter: N/A

p. Gas Check Width: N/A

q. Body Diameter (maximum OD): 66 mm

r. Body Diameter (minimum OD): 33 mm

s. Wall Thickness: N/A

t. Stabiliser Boom Diameter (OD): 29 mm

u. Stabiliser Boom Diameter (ID): Not taken

v. Stabiliser Boom Thread Diameter: N/A

w. Number of Gas Ports: No gas ports present

x. Fin Diameter: 4 mm

y. Main Filler Cavity Depth: ≈155 mm

z. Ignition Cartridge Cavity Depth: No ignition cartridge present

aa. Number of Fuze Well Threads: 7 – 8 visible above explosive fill

bb. Number of Adapter Threads: N/A

cc. Number of Stabiliser Boom Threads: N/A

dd. Adapter Weight: N/A

ee. Booster Charge Weight: N/A

ff. Main Filler Weight: ≈ 800 grams

gg. Adapter Material: N/A

hh. Booster Charge Material: N/A

ii. Projectile Material: Plastic

jj. Main Filler Material: **Solid HE fill with pre-formed fragmentation sleeve** (≈ 650 ball bearings)

kk. Stabiliser Boom Material: Plastic

ll. Fin Material: Plastic

3. Ignition Cartridge

No Ignition charge present

4. Propellant Charge

No propellant charge present

5. Painting and Markings

a. Adapter Markings: N/A

b. Projectile Colour; Markings:

i. Black Plastic

ii. No visible markings

c. Fin Colour; Markings:

i. Black Plastic

ii. No visible markings

d. Ignition Cartridge Colour; Markings: No ignition cartridge present

e. Primer Colour; Markings: No primer present

6. Additional Information

N/A

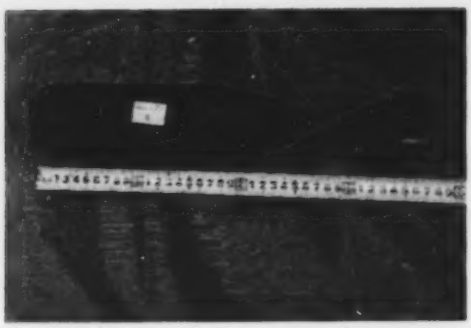


Figure 8. Photograph of the unexploded munition.

Figure 9. X-Ray image of the unexploded munition depicting a pre-formed fragmentation sleeve in the head section.

Annex 10

MAPPING OF INCIDENT LOCATION IN AL-HAMADANIYAH

Geolocation from videos related to note verbale No. 26

The Situation Centre was provided with a USB storage device with two short video clips, received by the FFM (note verbale No. 26, dated 18 April 2017) and asked to identify where the videos were filmed from and to attempt to identify the location of a plume that can be seen in the video referenced above. The Situation Centre was also asked if it was possible to provide the approximate time of day the video was filmed. The videos were checked for metadata which may have provided information regarding the location, date or time, but there was none present.

Location

The Situation Centre studied the videos for identifying features which could be used to geolocate the location from where the film was recorded. These identifying features were then categorised into primary and secondary features, depending on how critical/useful they could be in the identification process.

The primary features were then searched for on open source maps such as Google Earth® and Bing Maps. Google Earth® provided several images spanning the date of interest.

The water tower was the primary identifying feature due to its unusual shape, and proximity to a long wall and multiple electricity pylons. A shadow analysis was performed and one water tower matching the profile and in the location of interest (LOI) was identified.

Electricity pylons (from shadow analysis), key buildings, a road layout, road type, and roadblock were all used as secondary geolocaters to confirm the location and provide a trajectory to identify the building from where the film was recorded.

The angle (line of sight) from the building to the yellow plume was then calculated. Without knowing the precise height of the plume it is not possible to provide a specific location for the plume, however an area has been identified.

A total 28 snapshots were taken from the videos and then stitched together using Hugin Pamorama Stitcher software. The result is a panorama picture of the scene covering the whole angle of the video from the left to right border. This image has been used in the report to verify the locations identified in the steps above on a satellite image/map. Colour coding was used on all features identified on all pictures to demonstrate the geolocation factors.

Using the angles provided from the line-of-sight work carried out, the area the plume is seen in has been located. The distance cannot be precisely calculated; however an approximate area has been identified.

Time

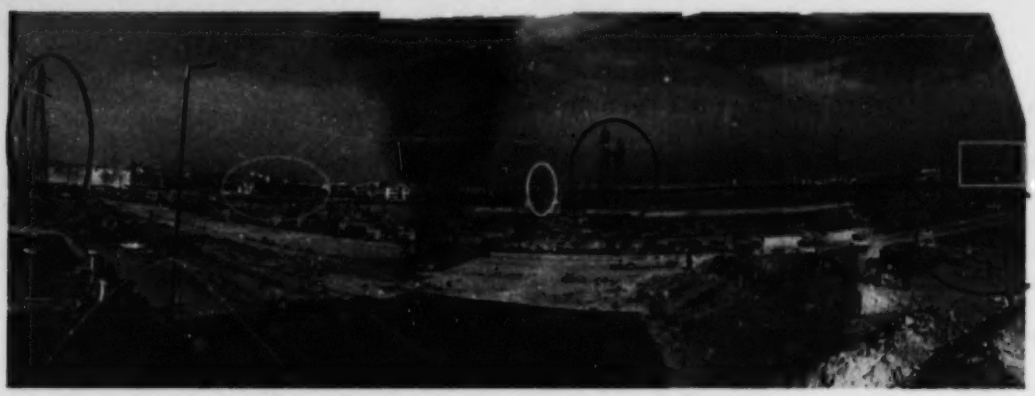
Using the date of the alleged incident, the location calculated in the steps above, and the shadows provided, the Situation Centre was able to approximate at what time of day the video was filmed.

The primary feature used for this analysis was the building the video was filmed from. This is a three-storey building and, as such, the approximate height of the building was calculated.

Assuming the video was taken on 30 October 2016 (according to prior information), an estimated time frame was calculated using suncalc.org.

All assumption and fix points were cross-referenced with various open source satellite imagery as well as with open source aerial images.

Geolocation of the area captured in the video

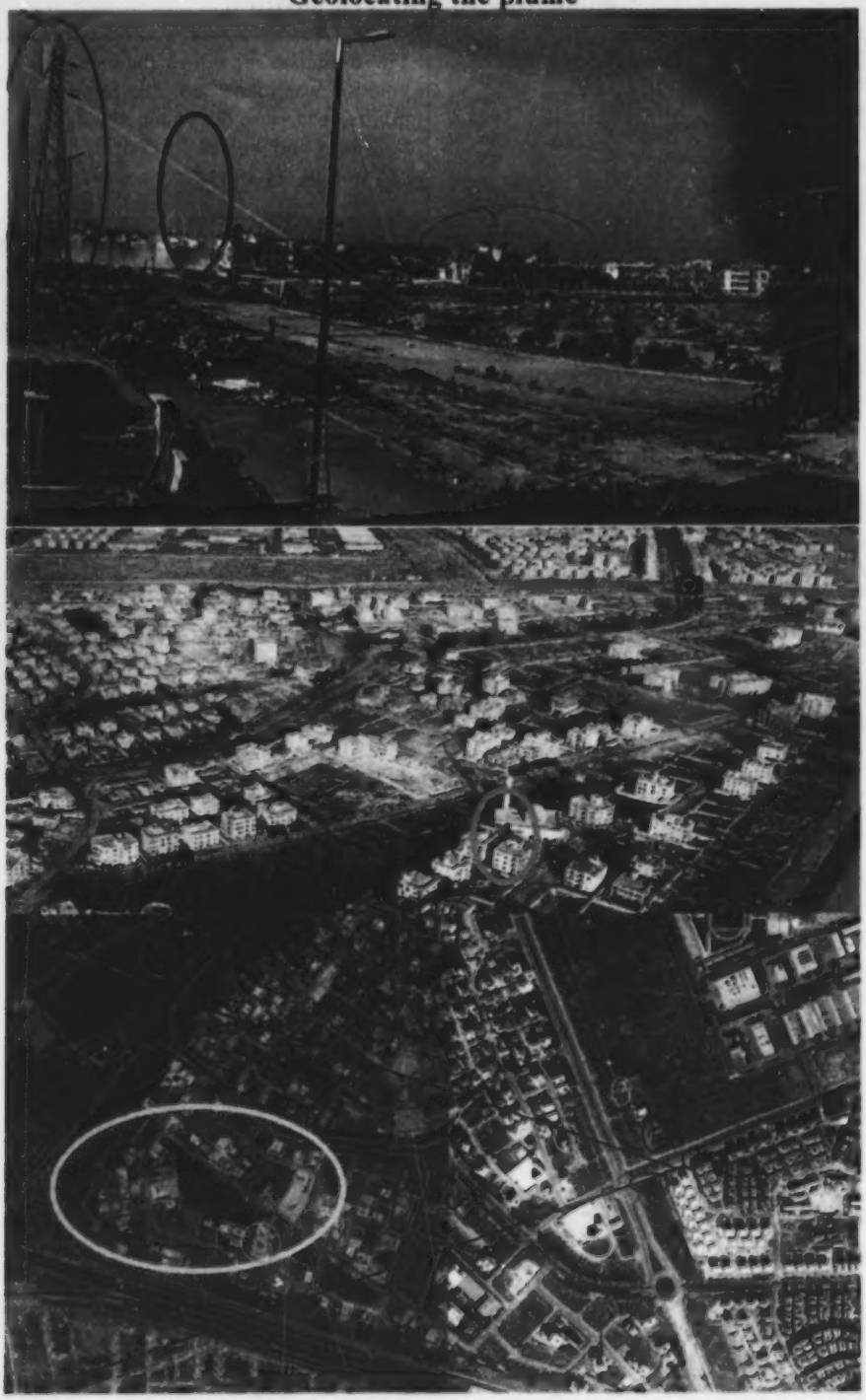


These images show a comparison between the video analysed and a satellite image of the area, highlighting the reference points used. The water tower highlighted in yellow is the primary reference point and was used due to its unique shadow pattern.

Geolocating the camera position

These images show how the camera position was identified. The reference points used were the water tower, buildings and wall in front of it, and the position of the electricity pylons.

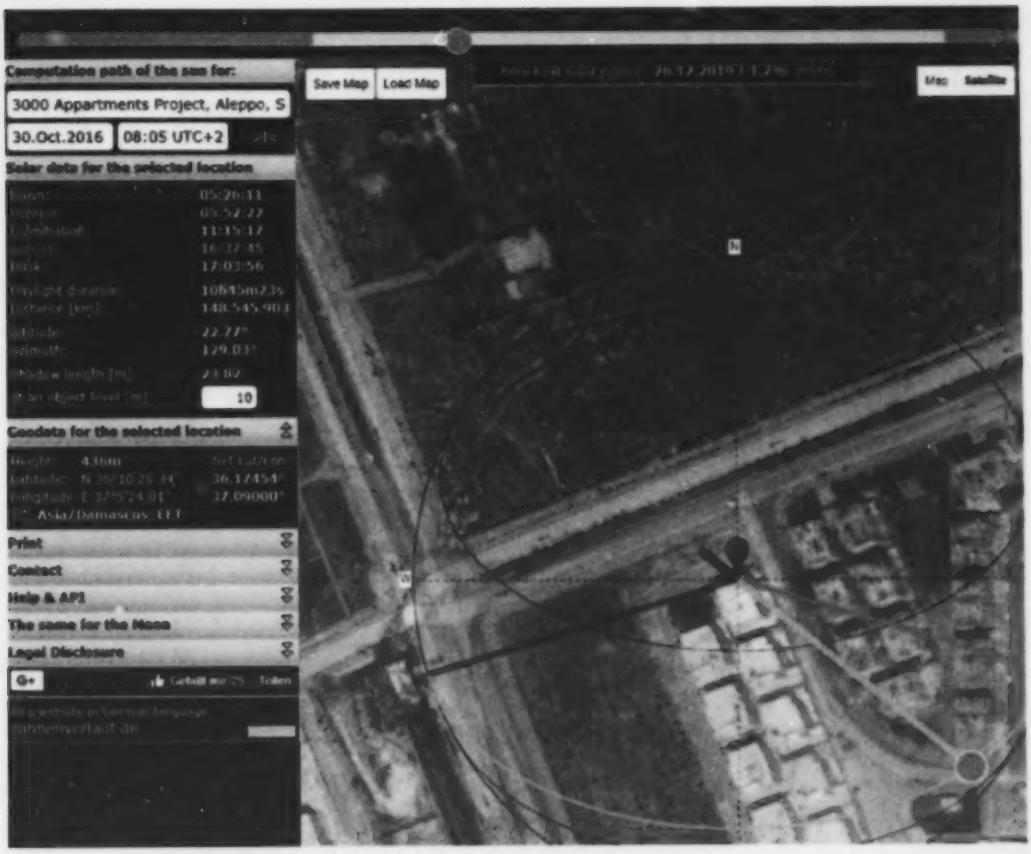
Geolocating the plume



The location of the yellow plume seen in the film and marked in dark red in the first image was identified using the minaret beyond the end of the street, marked in all images in pink. Drone footage from open source as well as satellite imagery was used. The location of the yellow plume from the video is within the white ellipse marked above.

Estimated time of recording using shadow analysis

The length and direction of the shadow of the building from where the video was filmed was used to calculate the approximate time of day the video was recorded.



Geolocation from video connected to the 3000 Apartments Project

The Situation Centre was provided with a USB storage device containing a video reported by the authorities of the Syrian Arab Republic to be connected to the incident from the 3000 Apartments Project. The video shows the impact and bursting of a projectile followed by a release of white smoke, and the Centre was asked to identify where the videos were filmed from and to attempt to identify the location of a plume that can be seen in the video reference above. The Situation Centre was also asked if it was possible to provide an approximate time of day the video was filmed.

Location
Initial georeferencing was done using primary identifying features from a previous analysis. The Al-Assad Military Academy and the perimeter road running south of the academy can clearly be seen, as well as the previously described water tower with a funnel shape.
Due to the low quality of the video, the colours in the snapshot below, taken from the video, were altered to highlight the water tower.

Date
EXIF data shows that it was created on 30 October 2016 at 15:30.

Geolocating the plume

The yellow star, annotated on both the snapshot from the video and the satellite image, marks the white plume and geolocates the white plume referred to in the text of this report. The camera symbol shows where the video was filmed from, while other annotations highlight secondary features used for geolocation.

Annex 11

MAPPING OF INCIDENT LOCATION IN KARM AL-TARRAB

Geolocation from video

The Situation Centre was provided with a USB storage device containing two short video clips [Filenames:13.11.mp4 & VID-20161212-WA0011.mp4] and a number of still images, and asked to identify where the videos were filmed from. The Situation Centre was also asked if it was possible to extract information pertaining to the creation time and date of the first video.

Location

The Situation Centre studied the videos for identifying features which could be used for geolocation. These identifying features where then categorised into primary and secondary features, depending on how critical/useful they could be in the identification process.
The primary features were then searched for on open source maps such as Google Earth® and Bing Maps, as well as on satellite imagery obtained from 8 and 17 November 2016.
A building with an unusual set of blue and white blocks around the edge of the roof, and two small towers behind the soldiers as they move into the vehicle, were the primary identifying features.

Approximately 30 snapshots were taken from the 13.11.mp4 video and then stitched together using Hugin Pamorama Stitcher software and Microsoft Image Composite editor. The images were stitched into three different products. A single stitch could not be generated due to the different filming positions within the area and the zoom used for some parts of the video. These images have been analysed and geolocated to a satellite image of the area.
Colour coding was used to show that the two stitched images are part of the same panorama and also to match the stitched images to the satellite image, therefore geolocating the film.

Date

EXIF data extracted from the film shows that it was created on 15 November 2016, whereas the still images are from 13 November 2016. The video is not from one single cut, but has either been edited down or is made up of multiple videos. The EXIF date for the film might relate to the date on which this video was created (edited).

Creating and verifying a panorama from the stitched images

The red, blue, and yellow ellipses on these images identify points on the images that highlight the overlap.

Geolocating the video

These images (panorama from the video and a satellite image of the same area) have been annotated using matching coloured ellipses to identify matching location features. The camera indicates the approximate position of filming for this part of the video.
The purple circle at the bottom of the satellite image matches a hole in the roof, as seen from the inside of the building at 00:13 in video VID-20161212-WA0011.mp4.

These images (panorama from the video and a satellite image of the same area) have been annotated using matching coloured ellipses to identify the building with the blue and white blocks around the roof and a partially demolished building captured to the right of the panorama. The camera indicates the approximate position of filming for this part of the video.

Annex 12

LIST OF EVIDENCE GATHERED DURING THE INTERVIEW PROCESS

First Deployment

No	ERN	DCN	Evidence Description	Evidence Collected/Received	
				DTG	Where
1	201612141006501	10065	1 x MSD Audio recording	14/12/2016 19:56	Damascus
2	201612141006502	10065	1 x MSD Video recording	14/12/2016 19:56	Damascus
3	201612141006301	10063	1 x MSD Audio recording	14/12/2016 19:42	Damascus
4	201612141006302	10063	1 x MSD Video recording	14/12/2016 19:42	Damascus
5	201612141005701	10057	1 x MSD Audio recording	14/12/2016 19:35	Damascus
6	201612141005702	10057	1 x MSD Video recording	14/12/2016 19:35	Damascus
7	201612141000801	10008	1 x MSD Audio recording	14/12/2016 19:24	Damascus
8	201612141000802	10008	1 x MSD Video recording	14/12/2016 19:24	Damascus
9	201612151007101	10071	1 x MSD Audio recording	15/12/2016 18:22	Damascus
10	201612151007102	10071	1 x MSD Video recording	15/12/2016 18:22	Damascus
11	201612151006401	10064	1 x MSD Audio recording	15/12/2016 18:25	Damascus
12	201612151006402	10064	1 x MSD Video recording	15/12/2016 18:27	Damascus
13	201612151007001	10070	1 x MSD Audio recording	15/12/2016 18:25	Damascus
14	201612151007002	10070	1 x MSD Video recording	15/12/2016 18:27	Damascus
15	201612151006901	10069	1 x MSD Audio recording	15/12/2016 18:29	Damascus
16	201612151006902	10069	1 x MSD Video recording	15/12/2016 18:29	Damascus
17	201612151006201	10062	1 x MSD Audio recording	15/12/2016 18:32	Damascus
18	201612151006202	10062	1 x MSD Video recording	15/12/2016 18:32	Damascus
19	201612151006701	10067	1 x MSD Audio recording	15/12/2016 18:39	Damascus
20	201612151006702	10067	1 x MSD Video recording	15/12/2016 18:39	Damascus
21	201612151006801	10068	1 x MSD Audio recording	15/12/2016 18:42	Damascus

No	ERN	DCN	Evidence Description	Evidence Collected/Received	
				DTG	Where
22	201612151006802	10068	1 x MSD Video recording	15/12/2016 18:42	Damascus
23	201612151005501	10055	1 x MSD Audio recording	15/12/2016 18:44	Damascus
24	201612151005502	10055	1 x MSD Video recording	15/12/2016 18:44	Damascus
25	201612151005601	10056	1 x MSD Audio recording	15/12/2016 18:48	Damascus
26	201612151005602	10056	1 x MSD Video recording	15/12/2016 18:48	Damascus

Fifth Deployment

No	ERN	DCN	Evidence Description	Evidence Collected/Received	
				DTG	Where
1	201803311002801	10028	1 Micro SD Audio Recording	31/03/18 16:00	Damascus
2	201803311002802	10028	1 SD Card Video Recording	31/03/18 16:01	Damascus
3	201803311002601	10026	1 Micro SD Audio Recording	31/03/18 17:39	Damascus
4	201803311002602	10026	1 SD Card Video Recording	31/03/18 17:39	Damascus
5	201804011001601	10016	1 microSD Card Video Recording w/ adapter	01/04/18 19:00	Damascus
6	201804011001602	10016	1 Micro SD Audio Recording	01/04/18 19:00	Damascus
7	201804011001603	10016	1 page drawing	01/04/18 19:00	Damascus
8	201804011001401	10014	1 microSD Card Video Recording w/ adapter	01/04/18 20:14	Damascus
9	201804011001402	10014	1 Micro SD Audio Recording	01/04/18 20:14	Damascus
10	201804011007201	10072	1 microSD Card Video Recording w/ adapter	01/04/18 20:18	Damascus
11	201804011007202	10072	1 Micro SD Audio Recording	01/04/18 20:19	Damascus
12	201804011007203	10072	Drawing of building (1 page), 3 maps of affected areas (3 pages), 1 SD card containing maps and area S/N P425629	01/04/18 20:20	Damascus
13	201804011006602	10066	1 Micro SD Audio Recording	01/04/18 20:25	Damascus
14	201804011006601	10066	1 microSD Card Video Recording w/ adapter	01/04/18 20:26	Damascus
15	201804011006603	10066	5 maps of affected area (5 pages), 1SD card w/ 4 maps (S/N P093671)	01/04/18 20:27	Damascus
16	201804021001202	10012	1 SD card containing video recording of interview	02/04/18 19:35	Damascus
17	201804021001201	10012	1 micro-SD card containing audio recording of interview	02/04/18 19:35	Damascus
18	201804021003101	10031	1 SD card containing video recording of interview	02/04/18 19:37	Damascus

No	ERN	DCN	Evidence Description	Evidence Collected/Received	
				DTG	Where
19	201804021003103	10031	1 micro-SD card containing audio recording of interview	02/04/18 19:38	Damascus
20	201804021003102	10031	Drawing(1) page	02/04/18 19:38	Damascus
21	201804021002402	10024	1 SD card containing video recording of interview	02/04/18 19:45	Damascus
22	201804021002401	10024	1 micro-SD card containing audio recording of interview	02/04/18 19:46	Damascus
23	201804021003002	10030	1 SD card containing video recording of interview	02/04/18 19:47	Damascus
24	201804021003001	10030	1 micro-SD card containing audio recording of interview	02/04/18 19:48	Damascus
25	201804021003001	10050	1 SD card containing video recording of interview	02/04/18 19:15	Damascus
26	201804021003002	10050	1 micro-SD card containing audio recording of interview	02/04/18 19:16	Damascus
27	201804021003003	10050	1 page drawing, 3 pages printed maps	02/04/18 19:17	Damascus
28	201804021001001	10010	1 SD card containing video recording of interview	02/04/18 19:18	Damascus
29	201804021001002	10010	1 micro-SD card containing audio recording of interview	02/04/18 19:19	Damascus
30	201804021001003	10010	1 page drawing	02/04/18 19:20	Damascus
31	201804021001101	10011	1 SD card containing video recording of interview	02/04/18 19:21	Damascus
32	201804021001102	10011	1 micro-SD card containing audio recording of interview	02/04/18 19:22	Damascus
33	201804021001103	10011	1 page drawing	02/04/18 19:23	Damascus

Enclosure II

[Original: Arabic, Chinese, English, French, Russian and Spanish]

NOTE BY THE TECHNICAL SECRETARIAT

INTERIM REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA REGARDING THE INCIDENT OF ALLEGED USE OF TOXIC CHEMICALS AS A WEAPON IN DOUMA, SYRIAN ARAB REPUBLIC, ON 7 APRIL 2018

1. INTRODUCTION

This document contains an update on the work of the OPCW Fact-Finding Mission in Syria (FFM) regarding the alleged use of toxic chemicals as a weapon in Douma, the Syrian Arab Republic, on 7 April 2018. The work of the FFM was conducted in accordance with preambular paragraph 8 and operative paragraphs 5 and 6 of decision EC-M-48/DEC.1 (dated 4 February 2015) and other relevant decisions of the OPCW Executive Council (hereinafter "the Council"), as well as under the Director-General's authority to seek to uphold at all times the object and purpose of the Chemical Weapons Convention, as reinforced by resolutions 2118 (2013) and 2209 (2015) of the United Nations Security Council as applicable to this investigation. The mandates for the investigation of the alleged incident are referenced in note verbale NV/ODG/214589/18 (dated 10 April 2018) of the Technical Secretariat (hereinafter "the Secretariat") and note verbale No. 38 of the Syrian Arab Republic (dated 10 April 2018).

2. SUMMARY

2.1 On 10 April 2018, the Secretariat and the Permanent Representation of the Syrian Arab Republic to the OPCW exchanged notes verbales regarding the urgent dispatch of an FFM team to Damascus to gather facts regarding the incident of alleged use of toxic chemicals as a weapon in Douma on 7 April 2018. An advance team was dispatched on 12 April and a follow-on team the next day, with the full complement arriving in Damascus on 15 April 2018. A second team deployed to a neighbouring country on 16 April to conduct further activities in relation to the allegation.

2.2 The FFM team was not able to enter Douma for almost a week after its arrival, owing to the high security risks to the team, which included the presence of unexploded ordnance, explosives, and sleeper cells still suspected of being active in Douma. On 18 April 2018, during a reconnaissance visit to two sites of interest, the security detail was confronted by a hostile crowd and came under fire from small arms and a hand grenade that exploded. The incident reportedly resulted in two fatalities and one injury.

2.3 On 21 April 2018, after security concerns had been addressed, the FFM team conducted its first visit to one of the alleged sites of interest, and it was deemed an acceptable risk to enter Douma. The FFM team deployed four additional times

to other sites of interest over the following 10 days, which included on-site visits to a warehouse and a facility suspected by the authorities of the Syrian Arab Republic of producing chemical weapons. There were no further security incidents and the FFM team was at all times isolated from local crowds and media personnel during the on-site visits, thereby allowing it to conduct its activities without interference. At one location, the FFM team was unable to gain access to some apartments at Location 2. The representatives of the Syrian Arab Republic stated that they did not have the authority to enter the locked apartment.

2.4 The FFM activities in Douma included on-site visits to collect environmental samples, the conduct of interviews with witnesses, and the collection of data. All of the environmental samples were collected by the FFM team in the presence of representatives of the Syrian Arab Republic, following the Organisation's chain-of-custody procedures. In a neighbouring country (hereinafter "Country X"), biological and environmental samples were gathered or received by the FFM team and interviews with witnesses, including alleged casualties, were conducted.

2.5 The results of the analysis of the prioritised samples submitted to OPCW designated laboratories were received by the FFM team on 22 May 2018. No organophosphorus nerve agents or their degradation products were detected, either in the environmental samples or in plasma samples from the alleged casualties. Various chlorinated organic chemicals were found in samples from Locations 2 and 4, along with residues of explosive. These results are reported in Annex 3. Work by the team to establish the significance of these results is ongoing.

2.6 The FFM team visited Locations 2 and 4, where it observed the presence of an industrial gas cylinder on a top floor patio at Location 2, and the presence of a similar cylinder lying on the bed of a top floor apartment at Location 4. Close to the location of each cylinder there were crater-like openings in the respective reinforced concrete roofs. Work is ongoing to assess the association of these cylinders with the incident, the relative damage to the cylinders and the roofs, and how the cylinders arrived at their respective locations.

2.7 Based on the equipment and chemicals observed during the two on-site visits to the warehouse and the facility suspected by the authorities of the Syrian Arab Republic of producing chemical weapons, there was no indication of either facility being involved in the production of chemical warfare agents.

2.8 The FFM team needs to continue its work to draw final conclusions regarding the alleged incident and, to this end, the investigation is ongoing.

3. BACKGROUND

3.1 On 7 April 2018, reports began to circulate on social media and in the press regarding an alleged chemical attack that had taken place around 16:00 local time on the same day in Douma, a district of eastern Ghouta in Damascus, the Syrian

Arab Republic and another attack the same evening at approximately 19:30. Casualty levels ranging from 40 to 70 deaths, including large numbers of children, and hundreds of chemical-related injuries, were reported. There were mixed reports of what toxic chemicals had been used, with some citing chlorine and others citing sarin, or mixtures of chlorine and sarin. Images and videos posted online showed casualties in a residential building as well as victims being treated at a hospital, reportedly for chemical exposure. Photos and videos of cylinders allegedly used in the two attacks were also posted online.

3.2 Widespread condemnation of the incident ensued, with armed opposition groups assigning responsibility for the alleged incident to the forces of the Syrian Arab Republic. The Syrian Arab Republic denied the attack and accused the media wing of Jaysh al Islam of fabricating the incident to incriminate the Syrian Arab Republic Government Forces.

3.3 On 10 April 2018, the Secretariat sent note verbale No. NV/ODG/214589/18 to the Syrian Arab Republic expressing its intention to deploy a team to Damascus. This correspondence coincided with note verbale No. 38 from the Permanent Representation of the Syrian Arab Republic to the OPCW requesting that an FFM team be dispatched urgently to visit the town of Douma to verify the information surrounding the alleged use of toxic chemicals on 7 April 2018. On the same day, the Permanent Representative of the Russian Federation to the OPCW submitted a letter to the Secretariat in which he welcomed the request from the Syrian Arab Republic and pledged to facilitate the work of the FFM.

3.4 An advance FFM team was mobilised and dispatched on 12 April 2018, with a follow-on team dispatched the next day.

4. AIMS AND SCOPE OF THE FACT-FINDING MISSION

4.1 The aim of the FFM, as specified in mandate FFM/050/18, was to gather facts regarding the incident of alleged use of toxic chemicals as a weapon on 7 April 2018 in Douma, eastern Ghouta, the Syrian Arab Republic, as reported in the media, and to report to the Director-General upon conclusion of the FFM activities. The sites for investigation included Damascus and any other relevant sites, subject to consultation with the Government of the Syrian Arab Republic and in accordance with paragraphs 12 and 13 of the FFM's terms of reference. All activities of the FFM were to be undertaken in accordance with the relevant Secretariat procedures relating to the conduct of inspections during contingency operations, as applicable. The operational instructions were to:

(a) review and analyse all available information pertaining to the reported incident of alleged use of toxic chemicals as a weapon;

(b) collect testimonies from persons alleged to have been affected by the use of toxic chemicals as a weapon, including those who underwent treatment; from eyewitnesses to the alleged use of toxic chemicals; from medical personnel who had provided treatment to or came into contact with persons who may have been affected by the alleged use of toxic chemicals;

(c) where possible and deemed necessary, carry out medical examinations, including autopsies, and collect biomedical samples of those alleged to have been affected;

(d) if possible, visit hospitals and other locations as deemed relevant to the conduct of its investigations;

(e) examine and, if possible, collect copies of the hospital records including patient registers, treatment records, and any other relevant records as deemed necessary;

(f) examine and, if possible, collect copies of any other documentation and records as deemed necessary;

(g) take photographs and video recordings and examine and, if possible, collect copies of video and telephone records;

(h) if possible and deemed necessary, physically examine and collect samples from remnants of munitions, devices, cylinders, containers, etc. alleged to have been used during the incident under investigation;

(i) if possible and deemed necessary, collect environmental samples at or from the alleged points of the incident and surrounding area; and

(j) arrange transport for the off-site analysis of the collected samples.

4.2 On 20 April 2018, the Syrian Arab Republic submitted a note verbale to the Secretariat formally requesting the Director-General to instruct the FFM team to carry out a visit, within the framework of its mission, to gather facts surrounding the allegations of 7 April 2018, to a warehouse suspected by the authorities of the Syrian Arab Republic of storing chemicals related to the production of chemical weapons.

4.3 Two further mandates (FFM/049/18 and FFM/051/18) were issued by the Director-General instructing the FFM team to conduct activities in Country X in relation to the investigation of alleged use of toxic chemicals as a weapon in the Syrian Arab Republic on 7 April 2018.

5. PRE-DEPLOYMENT ACTIVITIES AND TIMELINE

5.1 Following reports in the media of the alleged incident on 7 April 2018, the Information Cell of the Secretariat immediately informed the FFM team and initiated a search of open-source information to assess the credibility of the allegation. The major sources comprised news media, blogs, and the websites of various non-governmental organisations. The assessment by the Information Cell was that the credibility of the allegation was high. Based on this information, the Director-General initiated an on-site investigation.

5.2 An FFM team comprising nine inspectors and two interpreters was mobilised on 9 April 2018 and pre-deployment activities commenced immediately. Preparations were made to deploy an advance team of three inspectors and an

interpreter on 12 April and a follow-on team on the next day. The team was briefed by the Information Cell on all relevant information that had been gathered to date.

6. SECURITY AND ACCESS TO THE SITES OF THE ALLEGED INCIDENTS

6.1 Given the recent military activities and the volatile situation in Douma at the time of the FFM deployment, security and safety considerations were of paramount importance. Considerable time and effort were invested in discussions and planning to mitigate the inherent security risks to the FFM team and others deploying into Douma. According to Syrian Arab Republic and Russian Military Police representatives, there were a number of unacceptable risks to the team, including mines and explosives that still needed to be cleared, a risk of explosions, and sleeper cells still suspected of being active in Douma. This assessment was shared by the representative of the United Nations Department of Safety and Security (UNDSS). Moreover, the operation to evacuate residents who had accepted an offer to leave Douma was ongoing, using the same road the team would have to take.

6.2 At the outset, the formal position of the FFM team, as instructed by the Director-General, was that security of the mission should be the responsibility of the Syrian Arab Republic. During the initial meetings in Damascus, the FFM team was informed by Syrian and Russian representatives that the Syrian Arab Republic could guarantee the safety of the FFM team only if the security was provided jointly with the Russian Military Police.

6.3 Following consultations with OPCW Headquarters it was agreed between the Secretariat, the Syrian Arab Republic, the Russian Military Police, the United Nations Office for Project Services (UNOPS), and UNDSS representatives that security within Douma could be provided by the Russian Military Police. This was formalised on 16 April 2018. Consequently, it was agreed that the Syrian Arab Republic would provide security from the hotel where the inspectors were staying to the final checkpoint at El Wafadin before entering Douma. From that point on, the Syrian Arab Republic would relinquish responsibility for security to the Russian Military Police. It was also agreed that the FFM team would be accompanied by Syrian Arab Republic representatives during the on-site activities, with Russian personnel limited to providing security.

6.4 During the reconnaissance visit by UNDSS on 18 April 2018 to assess the first two locations planned to be visited the following day, the security detail was confronted by a hostile crowd and came under fire from small arms and a hand grenade that exploded at Location 2 (see Figure 2 in section 8 below). The incident reportedly resulted in two fatalities and an injury to a Russian soldier.

6.5 Following the incident, the planned deployment of the FFM team was postponed until the security situation could be reassessed. Additional measures to mitigate

the high security risks were proposed by the UNDSS representative, which included:

(l) clearing the areas to be visited by the FFM team;

(m) securing the areas during the 24-hour period before deployment;

(n) increasing the number of escorts and having advance teams from the UNDSS and the Russian Military Police monitor the area prior to the arrival of the team at the sites;

(o) using the police force for crowd control;

(p) minimising the movement of civilians near the areas of interest given the possibility of suicide bombers getting within close proximity of the inspection team; and

(q) deploying snipers on rooftops around the sites of interest.

6.6 New routes of access to the locations of interest were identified and modifications to the initial FFM deployment plans were formulated. These included reducing the size of the FFM teams deploying to the field to facilitate better security control and limiting the number of sites to be visited during each deployment. All parties agreed that media reports and public pronouncements on operational aspects of the FFM were compounding the security risk for the team and efforts were made to mitigate this risk element.

6.7 Once the security reassessment had been concluded and the proposed additional mitigation measures implemented, the FFM team deployed to the sites of investigation in accordance with the updated priorities and proposed schedule.

6.8 For the remainder of the mission, the deployment by the FFM team proceeded without any security incidents. Access was granted to locations identified by the team as soon as adequate security conditions could be assured by the Syrian Arab Republic, the Russian Military Police, and the UNDSS. The Russian Military Police ensured that the team was fully isolated from local crowds and media personnel during the on-site visits, thereby allowing it to conduct its activities without interference.

6.9 The FFM visited Location 4 (see Figure 2) on two occasions. During the visit to Location 2, Syrian Arab Republic representatives did not provide the access requested by the FFM team to some apartments within the building, which were closed at the time. The Syrian Arab Republic representatives stated that they did not have the authority to force entry into the locked apartments.

7. MISSION ACTIVITIES

Methodological considerations

7.1 The FFM followed the same general methodology outlined in previous FFM reports, with the team adhering throughout its deployment to the most stringent

protocols available. Three FFM subteams were deployed to two locations at different time intervals to conduct activities relevant to the respective mandates.

7.2 Environmental sampling at the alleged incident sites in Douma was conducted by the FFM team, using its own equipment and ensuring full chain of custody throughout the operation in accordance with OPCW standard operation procedures (SOPs), work instructions (WIs), and guidelines. Samples were collected, sealed, and documented in photos and video recordings in the presence of Syrian Arab Republic representatives, and unpacked at the OPCW Laboratory for splitting and redistribution to the OPCW designated laboratories in the presence of the Permanent Representative of the Syrian Arab Republic to the OPCW.

7.3 Some environmental and biological samples were received by the FFM in Country X (see Annex 4). From the moment of receipt, these samples were handled as described above. The FFM team also directly oversaw the drawing of blood samples in Country X from witnesses allegedly exposed to toxic chemicals on 7 April 2018.

7.4 Interviews were conducted by inspectors proficient in interviewing techniques, following the strict procedures set out in the OPCW WIs. Prior to commencing the interviews, the process was described to the interviewee, with emphasis on the fact that, with the consent of the interviewee, the interviews would be audio and video recorded. After confirming that the process had been understood, interviewees were requested to sign a consent form. The interview process followed the free-recall approach, with follow-up questions to elicit information of potential evidentiary value and to clarify aspects of the testimony.

7.5 Open-source materials including but not limited to videos and photos were used primarily for planning activities, but also for comparative purposes with material collected by the FFM team during the course of the investigation.

Activities

7.6 The individual activities of the FFM were conducted in accordance with OPCW guidelines as well as SOPs and WIs (Annex 1).

7.7 The activities included:

(a) collecting environmental samples at sites relevant to the alleged incident, namely Locations 1, 2, and 4, as well as at locations reported by the Syrian Arab Republic as being a suspected chemical weapons production facility and warehouse;

(b) receiving and documenting biomedical and environmental samples brought to Country X by alleged casualties or witnesses, as well as overseeing the direct taking of blood samples;

(c) taking photographs and collecting data on the cylinders found at Locations 2 and 4, as well as the physical surroundings;

(d) taking photographs and collecting data from a facility and a warehouse suspected by the authorities of the Syrian Arab Republic of producing chemical weapons;

(e) conducting interviews with medical staff, casualties, first responders and witnesses of the alleged chemical attack in Douma;

(f) reviewing open-source materials; and

(g) the tagging of two cylinders.

7.8 The possibility of exhuming bodies from mass graves to collect biomedical samples and examining bodies reportedly exposed to toxic chemicals from the alleged attack on 7 April 2018 was considered by the Secretariat. The intention to do so was communicated to the Syrian Arab Republic in note verbale NV/ODG/214827/18, and preliminary preparations were undertaken by the Secretariat for this eventuality.

8. FACTUAL FINDINGS

Alleged sites

8.1 The sites visited during the FFM deployment included the hospital where victims were allegedly treated for chemical exposure (Location 1), the residential block with the cylinder on the balcony (Location 2), and the apartment with the cylinder lying on a bed (Location 4). Location 3 was initially considered a site of interest but was discarded on the basis of subsequent information. Two other locations, a facility and a warehouse, were visited to gather information to assess any possible connection with the manufacture of chemical weapons.

8.2 Locations 1 to 4 are shown on the satellite images of Douma in Figure 2 below.

Figure 1: LOCATION OF DOUMA IN THE SYRIAN ARAB REPUBLIC

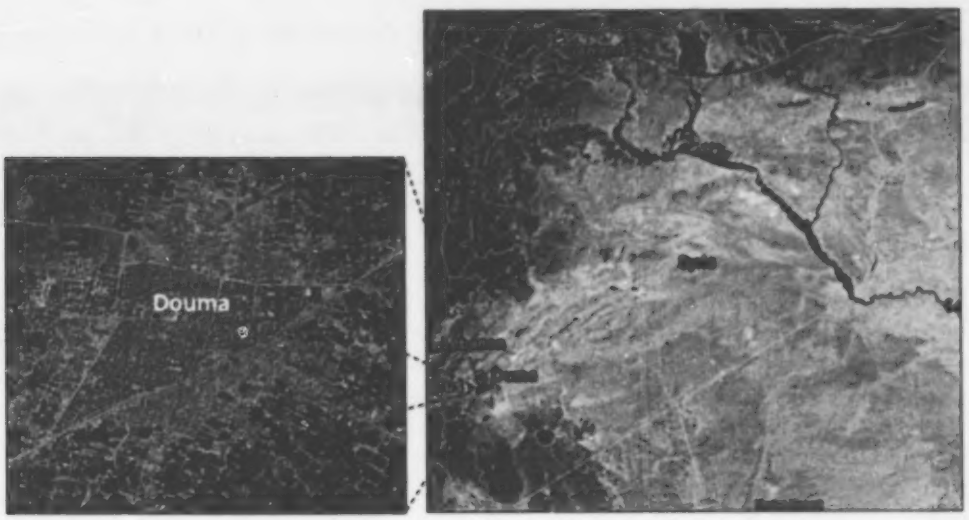
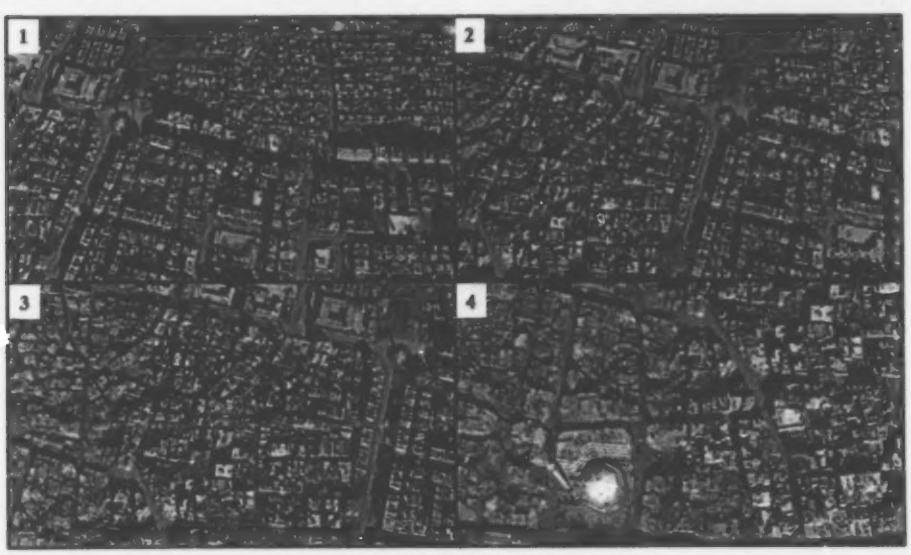


Figure 2: LOCATIONS OF INTEREST FOR THE FACT-FINDING MISSION IN DOUMA



8.3 The local meteorological conditions on 7 April 2018 around the time of the alleged incident, as registered in open sources (darksky.net), are shown in Table 1 below.

TABLE 1: LOCAL METEOROLOGICAL CONDITIONS ON 7 APRIL 2018

Time	Temperature	Wind Direction	Wind Speed	Precipitation	Clouds	Humidity
19:00	26°C	From SE	11 km/h	0.0 mm	overcast	27%

Sampling

8.4 The FFM team formulated detailed sampling plans for each site of allegation. The plans relied on robust scientific principles, supported where necessary and possible by peer-reviewed scientific literature or proven experience, to identify sample types and locations of greatest potential probative value to the mission.

8.5 The team executed the original sampling plans to the extent possible, adapting to actual conditions on site where necessary.

8.6 Given the number of locations visited and the diversity of potential evidentiary material available, over 100 samples in total were collected and transported to the OPCW Laboratory. To expedite the analysis of environmental samples considered at this stage to be of the greatest probative value or of the highest susceptibility to degradation, 31 samples were selected for the first round of analysis by the OPCW designated laboratories. The results of analysis are presented in Annex 3.

Analysis results

8.7 The results of analysis of the prioritised samples submitted to the designated laboratories were received by the FFM team on 22 May 2018. No organophosphorus nerve agents or their degradation products were detected, either in the environmental samples or in plasma samples from the alleged casualties. Various chlorinated organic chemicals were found in samples from Locations 2 and 4, along with residues of explosive. These results are reported in Annex 3. Work by the team to establish the significance of these results is ongoing.

Physical data collection

8.8 Aside from sampling, a large volume of information was gathered by the FFM team and included photographs, video recordings, detection measurements, dimensions of the cylinders and attached metallic structure, and the spatial arrangement in the environment of the cylinders.

Location 2 (cylinder on the roof)

8.9 The team deployed to Location 2 (N 33^0 34' 25.6", E 36^0 24' 17.3") on 21 April 2018.

8.10 During the visit to Location 2, Syrian Arab Republic representatives did not provide the access requested by the FFM team to some apartments within the building, which were closed at the time. The Syrian Arab Republic representatives stated that they did not have the authority to force entry into the locked apartments. This situation was relayed to OPCW Headquarters during the post-deployment debrief that same evening.

8.11 The FFM had full access to other areas of interest within the same building, namely the balcony where the cylinder had allegedly impacted, the apartment directly below this, and the basement of the same apartment block.

8.12 Work is in progress regarding the location of the cylinder, its provenance, and the damage to both the reinforced concrete balcony and the cylinder. A comprehensive analysis by experts in the relevant fields will be required to provide a competent assessment of the relative damage.

Location 4 (cylinder on the bed)

8.13 The team deployed to Location 4 (N 33° 34' 24", E 36° 23' 41.1") on 25 April 2018. The team gathered a broad selection of sample types, took videos, photos, detection measurements, and relevant dimensions of the location and the cylinder.

8.14 Work is in progress regarding the location of the cylinder, its provenance, and the damage to the reinforced concrete roof terrace and the cylinder. It is planned that a comprehensive analysis will be conducted by suitable experts, possibly in metallurgy and structural or mechanical engineering, to provide an assessment of how the cylinders arrived at its location, in addition to the observed damage to the bed and other furniture of the room, the roof, and the cylinder itself.

Location 1 (hospital)

8.15 The FFM team visited Location 1 (N 33° 34' 27.3", E 36° 24' 25") on 1 May 2018. The hospital operates in the basements of two multistorey buildings connected by an underground tunnel. The FFM team was guided through the hospital, including underground access tunnels, and took environmental samples and held discussions with medical personnel.

Warehouse and facility suspected of producing chemical weapons

8.16 At the warehouse and the facility suspected by the authorities of the Syrian Arab Republic of producing chemical weapons in Douma, information was gathered to assess whether these facilities were associated with the production of chemical weapons or toxic chemicals that could be used as weapons. From the information gathered during the two on-site visits to these locations, there was no indication of either facility being involved in the production of chemical warfare agents or toxic chemicals for use as weapons.

Interviews

8.17 The FFM team interviewed a total of 34 individuals; 13 of these interviews were conducted in Damascus and the remainder in Country X. Analysis of the testimonies is ongoing.

Annexes (English only):

Annex 1:Reference Documentation
Annex 2:Open Sources
Annex 3:Analysis Results
Annex 4:Samples Obtained by the Fact-Finding Mission
Annex 5:Documents Received From the State Party

Annex 1

REFERENCE DOCUMENTATION

Document Reference	Full Title of Document
QDOC/INS/SOP/IAU01 (Issue 1, Revision 1)	Standard Operating Procedure for Evidence Collection, Documentation, Chain-of-Custody and Preservation during an Investigation of Alleged Use of Chemical Weapons
QDOC/INS/WI/IAU05 (Issue 1, Revision 2)	Work Instruction for Conducting Interviews during an Investigation of Alleged Use
QDOC/INS/SOP/IAU02 (Issue 1, Revision 0)	Standard Operating Procedure Investigation of Alleged Use (IAU) Operations
QDOC/INS/SOP/GG011 (Issue 1, Revision 0)	Standard Operating Procedure for Managing Inspection Laptops and other Confidentiality Support Materials
QDOC/LAB/SOP/OSA2 (Issue 1, Revision 2)	Standard Operating Procedure for Off-Site Analysis of Authentic Samples
QDOC/LAB/WI/CS01 (Issue 1, Revision 2)	Work Instruction for Handling of Authentic Samples from Inspection Sites and Packing Off-Site Samples at the OPCW Laboratory
QDOC/LAB/WI/OSA3 (Issue 2, Revision 1)	Work Instruction for Chain of Custody and Documentation for OPCW Samples On-Site
QDOC/LAB/WI/OSA4 (Issue 1, Revision 3)	Work Instruction for Packing of Off-Site Samples

Annex 2

OPEN SOURCES

To be provided in the final report.

Annex 3

ANALYSIS RESULTS

TABLE A 3.1: ENVIRONMENTAL SAMPLES RECEIVED OR COLLECTED BY THE FACT-FINDING MISSION

Entry number	Sample Code	Description	Evidence Reference Number	DL02 code	Results DL 02	DL 03 code	Results DL 03
1.	01SLS	Concrete debris from the street, left side below window (level 0)	20180421190901	B	Dichloroacetic acid, trichloroacetic acid, chlorophenol, trinitrotoluene*.	C01	No CWC-scheduled chemicals detected. 2,4,6-Trinitrotoluene*.
2.	03SLS	Concrete debris from the middle of street opposite to the window (level 0)	20180421190903	C	Dichloroacetic acid, trichloroacetic acid, chlorophenol, dichlorophenol, trinitrotoluene*.	C03	No CWC-scheduled chemicals detected. 2,4,6-Trinitrotoluene*.
3.	10WPS	Swab from inside the cylinder orifice (level 3)	20180421190910	D	No chemicals relevant to CWC have been found.	E10	No CWC-scheduled chemicals detected.
4.	11WPS	Swab with water from inside the cylinder orifice (level 3)	20180421190911	E	Dichloroacetic acid, chloride.	E11	No CWC-scheduled chemicals detected.
5.	19SLS	Concrete debris from the crater-edge in front of the cylinder nose (level 3)	20180421190919	F	Dichloroacetic acid, trichloroacetic acid, chloral hydrate, trichlorophenol.	C19	No CWC-scheduled chemicals detected. 2,4,6-Trinitrotoluene*.
6.	25SDS	Wood fragment from kitchen door (level 2)	20180421190925	G	Dichloroacetic acid, trichloroacetic acid, chlorophenol.	V25	No CWC-scheduled chemicals detected. Phenol, 2,4,6-trichlorophenol†, 2,4,6-Trinitrotoluene*.
7.	30WPS	Dry wipe from bicycle rear cassette in basement (level -1)	20180421190930	H	No chemicals relevant to CWC have been found.	S30	No CWC-scheduled chemicals detected.

Entry number	Sample Code	Description	Evidence Reference Number	DL02 code	Results DL02	DL_03 code	Results DL03
8.	32SDS	Water tank wood support in basement (level -1)	20180421190932	I	Dichloroacetic acid, trichloroacetic acid.	V32	No CWC-scheduled chemicals detected. alpha-Pinene, bornyl chloride†, phenol, 2,4,6-trichlorophenol†, 2,4,6-Trinitrotoluene*.
9.	34SDS	Wood from partition frame in basement (level -1)	20180421190934	J	Dichloroacetic acid, trichloroacetic acid.	V34	No CWC-scheduled chemicals detected. Phenol, 2,4,6-trichlorophenol†, 2,4,6-Trinitrotoluene*.
10.	35AQS	Water from water tank in basement (level -1)	20180421190935	K	No chemicals relevant to CWC have been found.	W35	No CWC-scheduled chemicals detected.
11.	04SDS-L4	Blanket under cylinder	20180425178804	L	Dichloroacetic acid, trichloroacetic acid, chloral hydrate, trichlorophenol, trinitrotoluene*, chloride.	TL4	No CWC-scheduled chemicals detected. 2,4,6-Trinitrotoluene*.
12.	06SDS-L4	Wet wood from under the cylinder	20180425178806	M	Bornyl chloride†, chloride.	V06	No CWC-scheduled chemicals detected. alpha-Pinene, bornyl chloride†, phenol, 2,4,6-trichlorophenol†,
13.	10SDS-L4	Pillow cover on the bed , closer to the wall	20180425178810	N	Dichloroacetic acid, trichloroacetic acid, trichlorophenol, tetrachlorophenol, chloral hydrate, trinitrotoluene*, chloride.	T10	No CWC-scheduled chemicals detected. 2,4,6-Trinitrotoluene*.
14.	13WPS-L4	Dry wipe from stains on the wall, behind the bed	20180425178813	O	No chemicals relevant to CWC have been found.	S13	No CWC-scheduled chemicals detected. 2,4,6-Trinitrotoluene*.

Entry number	Sample Code	Description	Evidence Reference Number	DL02 code	Results DL02	DL03 code	Results DL03
15.	04WPS -PF	Swab sample with water from outlet valve on reactor	20180430150804	P	No chemicals relevant to CWC have been found.	E04	No CWC-scheduled chemicals detected.
16.	S7	Grouting from 5-13 c. 1 m out from LHS wall	20180501177907	Q	No chemicals relevant to CW have been found.	C07	No nerve agent related chemicals detected. Triethanolamine‡, 2,4,6-
17.	FFM-49-18-SDS04[1]	Piece of clothes from victim	20180421178219	S	Dichloroacetic acid, trichloroacetic acid, dichlorophenol, trichlorophenol.	T04	No nerve agent related chemicals detected. Triethanolamine‡, 2,4,6-trinitrotoluene*.
18.	FFM-*49-18-*SDS05[1]	*Pieces of timber*	20180421178220	T	No chemicals relevant to CWC have been found.	V05	No CWC-scheduled chemicals detected. Phenol, 2,4,6-trichlorophenol†, 2,4,6-trinitrotoluene*.
19.	FFM-49-18-SDS07[1]	Scarf collected from the basement	20180422174805	U	No chemicals relevant to CWC have been found.	T07	No nerve agent related chemicals detected. Triethanolamine‡, "AmgardV19" phosphonate♦, malathion, 2,4,6-trinitrotoluene*.
20.	FFM-49-18-SDS08[1]	Stuffed animal collected from basement	20180422174804	V	No chemicals relevant to CWC have been found.	T08	No nerve agent related chemicals Triethanolamine‡, 2,4,6-trinitrotoluene*.

Samples in rows 17, 18, 19 and 20 were received by the FFM team from witnesses. *Explosive, †Chlorinated compounds from wood, ‡Surfactant for textiles ♦ Flame retardant.

TABLE A 3.2: BIOMEDICAL SAMPLES RECEIVED OR COLLECTED BY THE FACT-FINDING MISSION

Entry number	Sample Code	Description	Evidence Reference Number	DL02 code	Results DL02	DL 03 code	Results DL03
1.	178201	Plasma	20180421178201	A	No relevant chemicals found	A	Nerve agent-adducts of BChE derived nonapeptide (G- and V-type agents): No compound found. Aged G agent-adduct of BChE-derived nonapeptide: No compound found. Nerve agent-adduct of tyrosine (G- and V-type agents): No compound found.
2.	178204	Plasma	20180421178204	B	No relevant chemicals found	B	
3.	178207	Plasma	20180421178207	C	No relevant chemicals found	C	
4.	178210	Plasma	20180421178210	D	No relevant chemicals found	D	
5.	178213	Plasma	20180421178213	E	No relevant chemicals found	E	
6.	175704A	Plasma	20180418175704A	F	Sample was not analysed	F	
7.	175703A	Plasma	20180418175703A	G	Sample was not analysed	G	
8.	1748PL	Plasma	201804211748PL	H	No relevant chemicals found	H	
9.	1753PL	Plasma	201804251753PL	I	No relevant chemicals found	I	
10.	1770PL	Plasma	201804211770PL	J	No relevant chemicals found	J	
11.	1795PL	Plasma	201804211795PL	K	No relevant chemicals found	K	

BChE = butyrylcholinesterase

Annex 4

SAMPLES OBTAINED BY THE FACT-FINDING MISSION

TABLE A 4: LIST OF SAMPLES COLLECTED OR RECEIVED BY THE FACT-FINDING MISSION

Entry number	Sample description	Evidence Reference Number	Source
1	Concrete debris from the street, left side below window (level 0)	20180421190901	Collected by the FFM
2	Concrete debris from the street opposite side of the entry of Location 2 (level 0)	20180421190902	Collected by the FFM
3	Concrete debris from the middle of street opposite the window (level 0)	20180421190903	Collected by the FFM
4	Control sample: debris 20 m west of building's entrance (level 0)	20180421190904	Collected by the FFM
5	Swab blank with DCM	20180421190905	Collected by the FFM
6	Wipe blank with DCM	20180421190906	Collected by the FFM
7	Swab blank with water	20180421190907	Collected by the FFM
8	Wipe blank with water	20180421190908	Collected by the FFM
9	Fabric stuck to metal bars from the balcony with the cylinder is (level 3)	20180421190909	Collected by the FFM
10	Swab from inside the cylinder orifice (level 3)	20180421190910	Collected by the FFM
11	Swab with water from inside the cylinder orifice (level 3)	20180421190911	Collected by the FFM
12	Metal fragment from the balcony (level 3)	20180421190912	Collected by the FFM
13	Wipe with DCM from the external surface of the cylinder (level 3)	20180421190913	Collected by the FFM
14	Wipe with water from the external surface of the cylinder (level 3)	20180421190914	Collected by the FFM
15	Dry wipe of the cylinder thread (level 3)	20180421190915	Collected by the FFM
16	Metal object from the balcony (Level 3)	20180421190916	Collected by the FFM
17	Concrete debris from the base of the cylinder (level 3)	20180421190917	Collected by the FFM
18	Metal bar at cylinder nose (Level 3)	20180421190918	Collected by the FFM
19	Concrete debris from the crater-edge in front of the cylinder nose (level 3)	20180421190919	Collected by the FFM
20	Tile from the balcony wall (level 3)	20180421190920	Collected by the FFM
21	Wipe with water from the burnt wall in the room located under the cylinder (level 2)	20180421190921	Collected by the FFM

Entry number	Sample description	Evidence Reference Number	Source
22	Wipe with DCM from burnt wall from room under the cylinder (level 2)	20180421190922	Collected by the FFM
23	Swab with water from wall plug in the room under the cylinder (level 2)	20180421190923	Collected by the FFM
24	Dry wipe from kitchen wall above the oven (level 2)	20180421190924	Collected by the FFM
25	Wood fragment from kitchen door (level 2)	20180421190925	Collected by the FFM
26	Towel from the room located under the cylinder (level 2)	20180421190926	Collected by the FFM
27	Exposed electrical wires from room under the cylinder (level 2)	20180421190927	Collected by the FFM
28	Lump of concrete from floor-debris from room under the cylinder (level 2)	20180421190928	Collected by the FFM
29	Soap bar from room under the cylinder (level 2)	20180421190929	Collected by the FFM
30	Dry wipe from bicycle rear cassette in basement (level -1)	20180421190930	Collected by the FFM
31	Swab with DCM from bicycle rear cassette in basement (level -1)	20180421190931	Collected by the FFM
32	Water tank wood support in basement (level -1)	20180421190932	Collected by the FFM
33	Light bulb from basement(level -1)	20180421190933	Collected by the FFM
34	Wood from partition frame in basement (level -1)	20180421190934	Collected by the FFM
35	Water from water tank in basement (level -1)	20180421190935	Collected by the FFM
36	Telephone from basement (level -1)	20180421190936	Collected by the FFM
37	2 nails and 2 screws from Basement wall (level -1)	20180421190937	Collected by the FFM
38	Swab with water from electric socket Basement (level -1)	20180421190938	Collected by the FFM
39	Swab with DCM from electric socket basement (level -1)	20180421190939	Collected by the FFM
40	Damp wall board from basement left of stairs (level -1)	20180421190940	Collected by the FFM
41	Wipe with water from basement wall (level -1)	20180421190941	Collected by the FFM
42	Wipe with DCM from basement wall (level -1)	20180421190942	Collected by the FFM
43	Wipe with water from lavatory extractor pipe in basement (level -1)	20180421190943	Collected by the FFM
44	Insect from lavatory in basement (level -1)	20180421190944	Collected by the FFM
45	Pillow from bed under the cylinder	20180425178801	Collected by the FFM
46	Metal fragment from bedroom floor	20180425178802	Collected by the FFM
47	Metal object from dresser	20180425178803	Collected by the FFM

Entry number	Sample description	Evidence Reference Number	Source
48	Piece of blanket under cylinder	20180425178804	Collected by the FFM
49	Control sample: piece of blanket opposite side of bed, on the floor	20180425178805	Collected by the FFM
50	Wet wood from under the cylinder	20180425178806	Collected by the FFM
51	Insects and dust from tray in bedroom shower	20180425178807	Collected by the FFM
52	Bedside lamp on top of mattress	20180425178808	Collected by the FFM
53	Copper wire attached to the roof, hanging from the ceiling lamp	20180425178809	Collected by the FFM
54	Pillow cover on the bed , closer to the wall	20180425178810	Collected by the FFM
55	Dry wipe from nozzle , front part next to thread	20180425178811	Collected by the FFM
56	Dry wipe from cylinder thread	20180425178812	Collected by the FFM
57	Dry wipe from stains on the wall, behind the bed	20180425178813	Collected by the FFM
58	Chips of paint from wall behind bed .	20180425178814	Collected by the FFM
59	Wipe with DCM blank	20180425178815	Collected by the FFM
60	Wipe with DCM from headboard	20180425178816	Collected by the FFM
61	Wipe with DCM of cylinder nozzle	20180425178817	Collected by the FFM
62	Calid paper from wall	20180425178818	Collected by the FFM
63	Gloves from stairs	20180425178819	Collected by the FFM
64	Wipe with DCM from door threshold, entrance of apartment	20180425178820	Collected by the FFM
65	Solid sample from white bag under jar labelled as hexamine	20180427191401	Collected by the FFM
66	Solid sample from jar labelled as hexamine	20180427191402	Collected by the FFM
67	Solid sample from white bag next to jar labelled as hexamine	20180427191403	Collected by the FFM
68	Solid sample from white bag with Cheminol label and labelled as hexamine	20180427191404	Collected by the FFM
69	Solid sample of unknown blue crystalline solid	20180427191405	Collected by the FFM
70	Solid sample of unknown green solid	20180427191406	Collected by the FFM
71	Swab blank with DCM	20180430150801	Collected by the FFM
72	Swab blank with water	20180430150802	Collected by the FFM
73	Swab sample with DCM from outlet valve on reactor	20180430150803	Collected by the FFM

Entry number	Sample description	Evidence Reference Number	Source
74	Swab sample with water from outlet valve on reactor	20180430150804	Collected by the FFM
75	DCM wipe of wall and floor at hose down area seen in open source video	20180501177901	Collected by the FFM
76	Water wipe of wall and floor at hose down area seen in open source video	20180501177902	Collected by the FFM
77	Swab blank with DCM	20180501177903	Collected by the FFM
78	Wipe blank with water	20180501177904	Collected by the FFM
79	Concrete dust scraping at pillar 51 (control)	20180501177905	Collected by the FFM
80	Concrete dust 5-13 on right hand side at wall	20180501177906	Collected by the FFM
81	Grouting from 5-13 c. 1 m out from LHS wall	20180501177907	Collected by the FFM
82	Piece of clothing from victim	20180421178219	Handed over by 1782
83	Piece of wood	20180421178220	Handed over by 1782
84	Dark blue vest	20180421178215	Handed over by 1782
85	Scarf collected from the basement	20180422174805	Handed over by 1748
86	Stuffed toy collected from basement	20180422174804	Handed over by 1748
87	Plasma samples	20180421178201	Handed over by 1782
88	Plasma samples	20180421178204	Handed over by 1782
89	Plasma samples	20180421178207	Handed over by 1782
90	Plasma samples	20180421178210	Handed over by 1782
91	Plasma samples	20180421178213	Handed over by 1782
92	Plasma samples	20180418175704A	Handed over by 1757
93	Plasma samples	20180418175703A	Handed over by 1757
94	Plasma samples	20180418175702A	Handed over by 1757
95	Plasma samples	20180418175701A	Handed over by 1757
96	Plasma samples	201804211748PL	Collected by the FFM
97	Plasma samples	201804211795PL	Collected by the FFM
98	Plasma samples	201804211770PL	Collected by the FFM
99	Plasma samples	201804251753PL	Collected by the FFM

Entry number	Sample description	Evidence Reference Number	Source
100	Blood cells samples	20180421178202	Handed over by 1782
101	Blood cells samples	20180421178205	Handed over by 1782
102	Blood cells samples	20180421178208	Handed over by 1782
103	Blood cells samples	20180421178211	Handed over by 1782
104	Blood cells samples	20180421178214	Handed over by 1782
105	Blood cells samples	20180418175704B	Handed over by 1757
106	Blood cells samples	20180418175703B	Handed over by 1757
107	Blood cells samples	20180418175702B	Handed over by 1757
108	Blood cells samples	20180418175701B	Handed over by 1757
109	Blood cells samples	201804211748BC	Collected by the FFM
110	Blood cells samples	201804211795BC	Collected by the FFM
111	Blood cells samples	201804211770BC	Collected by the FFM
112	Blood cells samples	201804251753BC	Collected by the FFM
113	Full blood samples	20180421178203	Handed over by 1782
114	Full blood samples	20180421178206	Handed over by 1782
115	Full blood samples	20180421178209	Handed over by 1782
116	Full blood samples	20180421178212	Handed over by 1782
117	Hair samples	20180418175705HS	Handed over by 1757
118	Hair samples	20180418175706HS	Handed over by 1757
119	Hair samples	20180418175707HS	Handed over by 1757
120	Hair samples	20180430178226	Handed over by 1782
121	Hair samples	20180430178227	Handed over by 1782
122	Hair samples	20180430178228	Handed over by 1782
123	Hair samples	20180430178229	Handed over by 1782
124	Hair samples	20180430178230	Handed over by 1782
125	DNA samples	20180426178221	Collected by the FFM

Entry number	Sample description	Evidence Reference Number	Source
126	DNA samples	20180426178222	Collected by the FFM
127	DNA samples	20180426178223	Collected by the FFM
128	DNA samples	20180426178224	Collected by the FFM
129	DNA samples	20180426178225	Collected by the FFM

Annex 5

DOCUMENTS RECEIVED FROM THE STATE PARTY

To be provided in the final report.